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THE MAGAZINE FOR FLEET OPERATORS

JUNE 1941

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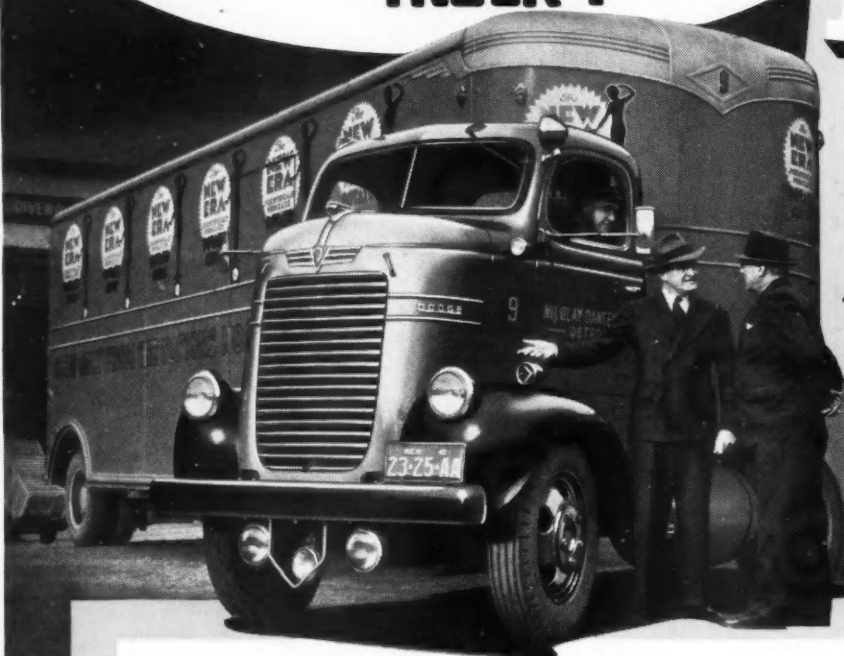
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Q

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DODGE *Job-Rated*
TRUCK ?**



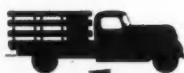
A

**That's easy,
mister!
It fits our job
... so it saves
more money!**

...and thousands of truck owners agree: you get the best truck
for your money when you get the right truck for your job!

**LOOK
AND
SAVE**

**BUY THE
1-2-3
WAY**



**1. Look at
Low-Priced Truck
"A"**



**2. Look at
Low-Priced Truck
"B"**



**3. Then Look at
Low-Priced
DODGE *Job-Rated* TRUCKS**

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COMMERCIAL CAR JOURNAL

with which is combined Operation & Maintenance

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EDITORIAL CONTENTS

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FEATURE ARTICLES

Truck Output Cut Not Alarming	17
Do You Want Gas and Oil Economy?	20
Getting a Line on Brake Lining	22
Grit & Bear It	24
In the Wake of the Wash	30
Bodies of the Month	32
ICC Weighs Hours for Non-Drivers	33
ATA Safety and Operations Forum	34
A Coal Company Keeps Costs	36

SPECIFICATIONS

Commercial Car Journal Truck Specifications	51
---	----

DESCRIPTIONS

Continental's New Engines	40
Six-Cylinder Ford Engine	42
GMC's 236 cu. in. Engine	126
New Crosley Line	108

DEPARTMENTS

Free Books, Booklets, etc.	17
CCJ Quiz	18
The Overload	19
Shop Hints from Fleet Shops	28
Legislative Lookout	38
Showcase of New Products	44
CCJ Newscast	46
New Truck Registrations	46
Free Money Savers to You	133
Advertisers' Index	154

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JUNE, 1941

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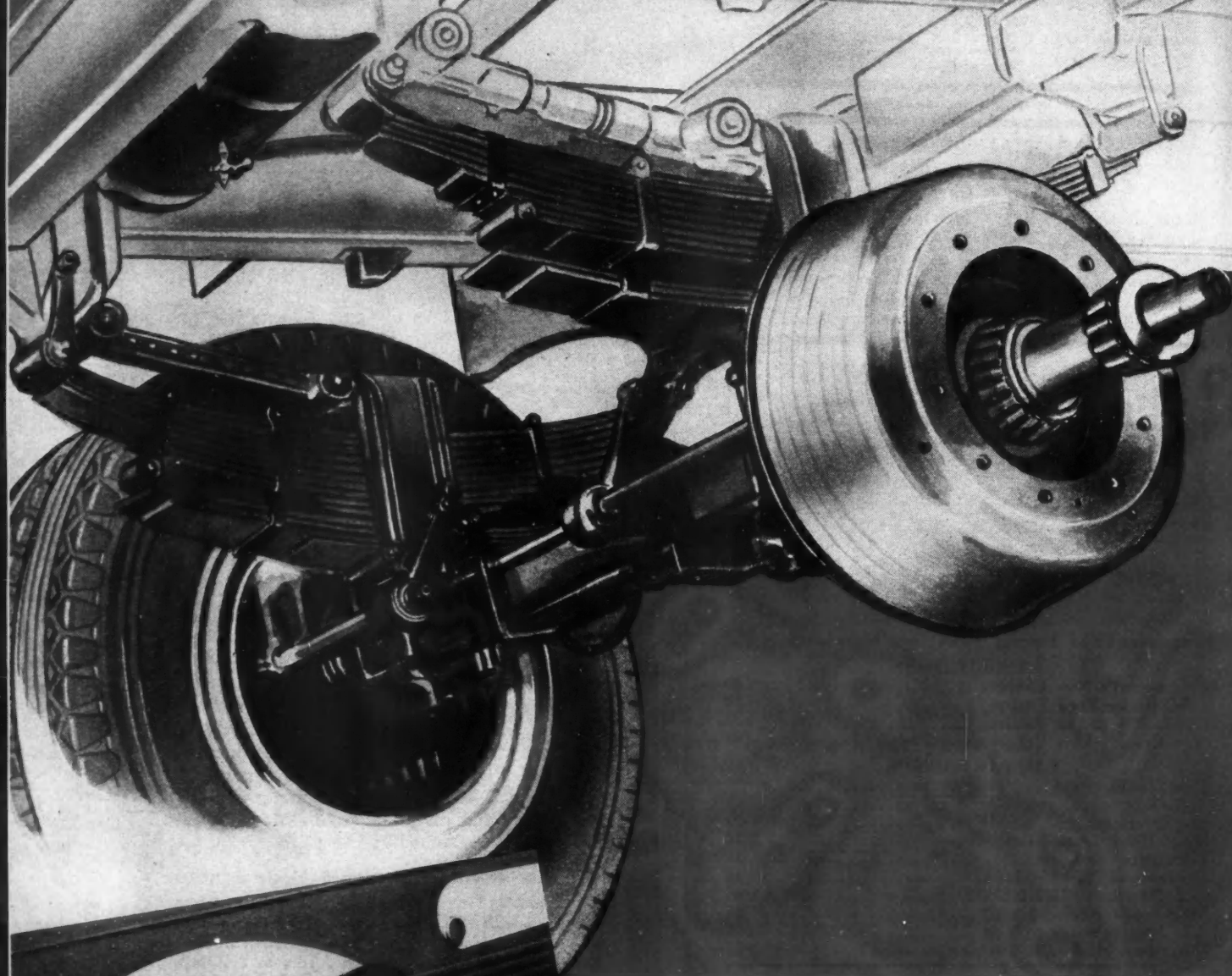
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COMMERCIAL CAR JOURNAL

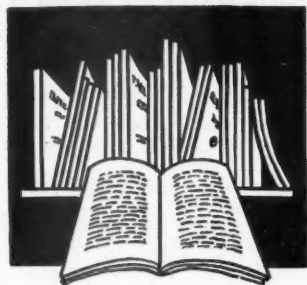
THE MAGAZINE FOR FLEET OPERATORS

Vol. LXI

JUNE, 1941

No. 4

FREE BOOKS



... a special selection made by the editors ... to get your copy, just check the letter on the post card between pages 132 and 133 which corresponds with the item you desire and mail to Commercial Car Journal, Philadelphia.

Vital Spots for Tires

The United States Rubber Co. has issued a booklet called Four Vital Spots, which tells how to extend the life of your tires by 20 per cent. It contains suggestions by experts, all of which are easy to understand and easy to follow. Check "A" on the postcard.

Hoof Governor Manual

A new governor manual has just been issued by the Hoof Products Co. Besides an article by a fleet operator who uses governors, there is a section devoted to answering pertinent questions that fleet operators ask as well as descriptive material and installation instructions. Check "B" on the postcard.

"Metallizing" Explained

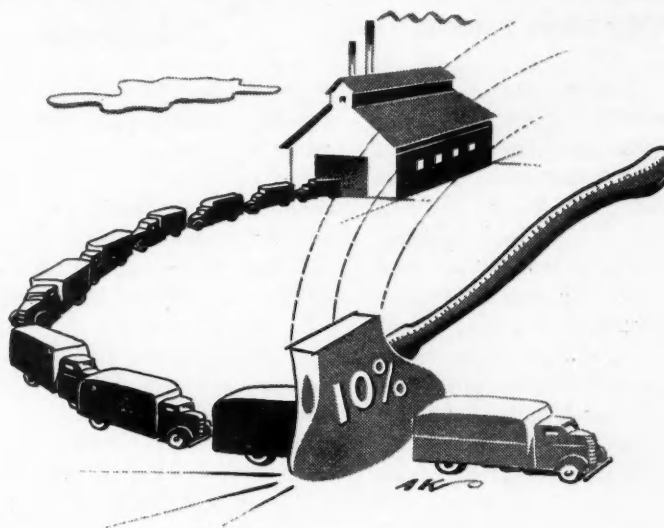
The Metallizing Engineering Co. has a new 16-page booklet describing the Metco Metallizing Process, which can be used to salvage worn shafts and other rotating parts and also to protect metal surfaces from corrosion. Check "C" on the post card.

"Motor Money"—A Story of Oil

"Motor Money" is a story of oil, its structure and what it does and what conditions cause it to break down. Then the booklet explains why a filter must be correctly designed and constructed for the functions it is to perform. The story is mostly told in pictures. Published by De Luxe Products Corp. Check "D" on the postcard.

Budd Duals

Another specialized booklet of inestimable value to the few fleetmen who have occasion to use it is the annual addition of "Budd Duals" published by Budd Wheel Co., Detroit. It contains just about all there is to know about wheel, rim and hub dimensions. Check "E" on the post card.



TRUCK OUTPUT CUT NOT ALARMING

OPM authorizes only 10 per cent reduction. Army and lease-lend truck needs will be considered separately

by **GEORGE T. HOOK**

Editor, Commercial Car Journal

THE reduction in automotive production ordered by the Office of Production Management in the latter part of April has been worked out in such a way during the last 30 days that the cut imposed upon the truck industry should not, in itself, work a hardship on civilian users of motor trucks.

The OPM has authorized a reduction in truck output for the model year beginning Aug. 1, 1941, that approximates 10 per cent. The term "approximates" is used here because the large producers of cars and trucks, and the large exclusively truck producers will take a 10 per

cent cut in their truck output; truck makers producing less than 2000 units will not be cut at all, and the other truck makers will take a 5 per cent cut. On this basis the mathematical average for the truck industry will be under 10 per cent, but only slightly because the producers taking the full 10 per cent cut account for such a large percentage of the total truck production. However, the average will be so close to 10 per cent that, for the purpose of analysis, use of that round number is permissible.

Each automotive manufacturer has
(TURN TO NEXT PAGE, PLEASE)

TRUCK OUTPUT CUT NOT ALARMING

CONTINUED FROM PAGE 17

received an official production authorization from OPM. In the case of the large companies making both cars and trucks the order stipulates that an overall reduction of 21½ per cent shall be effected. It also stipulates that in the case of trucks they may produce up to 90 per cent of 1940-41 model year truck production. COMMERCIAL CAR JOURNAL understands that the large combination producers will hold the truck cut to 10 per cent. This means that the cut in car production will exceed 21½ per cent.

Truck producers whose output is less than 2000 trucks and who will not have to curtail production, number about 40.

Now, what will the approximate reduction of 10 per cent in truck production mean to the domestic truck market? Analysis shows that civilian users of trucks can take an optimistic view of the situation.

It is unofficially estimated that truck production for the model year 1940-41 will be 1,000,000. This is for the United States alone and includes the trucks built for the armed

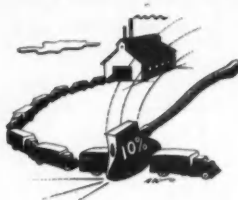
forces of the United States and certain foreign countries. This estimate, while unofficial, is a conservative one based upon production for the eight months ending March 31, 1941, and production schedules for the remaining four months of the model year. Output for the eight-month period was 591,317 and April, May, June and July schedules indicate that production will exceed a monthly average of 100,000.

The reduction for the next model year 1941-42 will be based on this figure of 1,000,000. A 10 per cent cut in the figure means that a total production of 900,000 trucks will be permissible under the terms of the OPM order. But most important of all is the fact that this production will be available for civilian uses in the domestic and export markets. This is because the OPM has indicated that trucks ordered during the 1941-42 model year by the armed forces of the United States and under the terms of the lease-lend bill will be considered apart from authorized production.

The availability of 900,000 trucks

for the civilian market should cause no domestic user serious inconvenience. COMMERCIAL CAR JOURNAL estimates that for the model year period Aug. 1, 1940, to July 31, 1941, new truck registrations in the United States will be around 675,000. That will beat the 1936-37 model year record by 44,000 units. The production total of 900,000 will provide domestic users with all the trucks they need. This is a safe prophecy if one remembers that the 675,000 registrations mentioned above include a considerable number of so-called anticipatory purchases or wise buying induced by fear of rising prices, difficult deliveries, curtailed production and what-not. Even if fear-buying continues, and there has been no abatement of it in fleet quarters, the 900,000 production should take care of the domestic market with allowance for at least a 10 per cent increase, and leave enough trucks to take care of the civilian export market in its currently curtailed form.

That is the optimistic picture if only the projected 10 per cent cut in output is considered. But the outlook is distinctly favorable also from the point of view of the truck's increased importance as a vital transportation link in the nation's defense program. The Administration's determination that the fruits of all-out



CCJ QUIZ

by ROBERT F. BAHL

You can match your wits against this matching test. It's fun, especially if you keep score. Credit yourself with 10 points each time you match ALL the items in a question. Sorry—no points at all if you miss even one part of any question. You ring the bell if you hit 100, but 80 or 90 still puts you right up in front.

(Correct Answers on Page 106)

1

Gasoline by nature is, of course, clear and almost colorless. For identification, many oil companies have dyed their product. Can you match these well-known brands with the proper colors?

- | | |
|---------------|----------|
| 1. Richfield. | a. Blue. |
|---------------|----------|

- | | |
|------------|------------|
| 2. Sunoco. | b. Orange. |
| 3. Gulf. | c. Golden. |

2

Will this one put the brakes on you or will you be able to match these up in three shakes of a model T?

- | | |
|----------------------|---------------------|
| 1. Air Brakes. | a. Solenoid valve. |
| 2. Vacuum Brakes. | b. Intake manifold. |
| 3. Electric Brakes. | c. Compressor. |
| 4. Hydraulic Brakes. | d. Master cylinder. |

3

The color of the explosive flame in your cylinders gives a good indication of the fuel mixture. What kind of an indication can you give?

- | | |
|--------------------|--------------------|
| 1. A red flame. | a. Too much air. |
| 2. A yellow flame. | b. Too much fuel. |
| 3. A blue flame. | c. Proper mixture. |

4

Here's a "League of Nations" question. Can you give the correct nationality of each of these pioneers in the development of gasoline engines?

- | | |
|-------------|-------------|
| 1. Daimler. | a. English. |
| 2. Forest. | b. French. |
| 3. Lawson. | c. German. |

- | | |
|------------|--------------|
| 4. Selden. | d. American. |
|------------|--------------|

5

Even if you couldn't read, you should be able to get an idea of most road signals by the shape alone. Do you know what these common shapes indicate?

- | | |
|-------------|--------------|
| 1. Square. | a. Stop. |
| 2. Round. | b. Caution. |
| 3. Diamond. | c. Railroad. |
| 4. Octagon. | d. Slow. |

6

Advertising departments devise descriptive phrases for various trucks; see if can match them up.

- | | | |
|---------------------------|-----------|---------|
| 1. Dodge. | 2. White. | 3. Reo. |
| a. Moreload Speed Wagons. | | |
| b. Job-Rated Trucks. | | |
| c. Super Power Trucks. | | |

7

If you saw four trucks, one from each of these four states, could you distinguish them by the color of their license plates?

- | | |
|------------------|----------------------|
| 1. New York. | a. Yellow and black. |
| 2. New Jersey. | b. Blue and orange. |
| 3. Pennsylvania. | c. Black and white. |
| 4. Ohio. | d. Brown and white. |

aid shall reach England has resulted in the transfer of intercoastal shipping to trans-oceanic service. This means that the burden of coastal and intercoastal commerce will be thrown on the railroads and on motor trucks. There is realization in Washington that despite their propaganda the railroads are inadequately equipped. In a brief filed with the Office of Production Management the Motor Truck Committee of the Automobile Manufacturers Association referred to "An Analytical Study of Railroad Car Equipment" prepared by R. N. Janeway for the National Resources Planning Board, and pointed out that the study revealed the following:

"(a) A 30 per cent decline in railroad-owned freight cars since 1929.

"(b) No increase in car utilization efficiency beyond the demonstrated maximum level can be relied upon to materialize in an emergency.

"(c) In a war emergency, the railroads would require 360,000 more cars than are now available (August, 1940)."

Up until recently the railroads have tried to conceal the seriousness of the situation in which they find themselves. Their propaganda has been of a type intended to lull the public into the feeling that the railroads are prepared, that everything

(TURN TO PAGE 153, PLEASE)

OVER LOAD



Ford Flash

Ford has announced a new six-cylinder engine. Details have not been released officially. A few facts, procured from fleet sources, appear on page 42 of this issue.

Mumblings About a Merger

A report is current that The Transport Co. merger will be revived in a greatly modified form and more in line with the opinion voiced by I.C.C. Chairman Eastman when the original application was denied by the I.C.C. It is considered likely that about a dozen motor freight lines will be involved and that the backbone of the merger will be Horton Motor Lines along the Atlantic Coast and Consolidated Motor Lines in New England. If the merger conforms with Eastman's ideas there won't be a rake-off in it for bankers.

Gold Rush of '41

Out on the West Coast the lines are being drawn for a legal battle that is expected to reach the highest court before it is ended. Six trucking companies have applied to the California Railroad Commission for certificates to operate intrastate between Los Angeles and San Francisco. With coastal shipping practically on the way out because bottoms will be diverted to service in the all-out-aid program, the motor freight certificates are looked upon as potential "gold mines." The applications are being contested by other motor freight carriers and the railroads.

Million Model Baby

Truck production during the so-called model year—Aug. 1, 1940 to July 31, 1941—will break all records. For the first time in history truck production will hit the million mark, according to the calculations of the industry's statisticians. The previous record high was 895,968 during the 1936-1937 model year. April, 1937, was the first month ever to show a production of 100,000 trucks. The exact figure was 100,324. April of 1941 should top that figure but the Ford strike may have reserved that honor for the month of May.

What's an Army Accident?

We wonder if the United States Army is keeping a record of motor vehicle accidents. Our curiosity is aroused by a report that during last November and December military vehicles in England were involved in accidents at the rate of 300 a day.

Judge Burke's Bouquet

Judge Anthony F. Burke, New York City magistrate, has joined the ranks of enforcement authorities who pin the rose of superiority on truck drivers. Quoth the judge: "The truck driver is the most careful and most courteous on the highway. He has

been educated by the fleet owners, his job is at stake, consequently he is prudent, cautious and responsible. He drives with a smile and gives the other fellow a break. Many of our 'better people' can take lessons in driving courtesy from the truck driver."

But You and Me . . . We Stink

Judge Burke was tough on private driver-owners of passenger cars. That includes you and me, but maybe the Judge excepts present company. Quoth the judge: "The private driver is imbued with the spirit of impatience and selfishness. He abuses other drivers and pedestrians. He abuses the police officer who restrains him and attempts to carry his abuse to the judge on the bench. He demands that his case be disposed of at once so he can get about his business."

And the Ladies . . . Well: They Smell

Turning to the ladies, the judge was gentlemanly but not gentle. Quoth he: "I'm sorry to say I cannot exclude women drivers from these all too uncomplimentary remarks. They know when to say 'please' and 'thank you,' and they know which fork to use. But in driving manners, they can take lessons from the truck drivers."

NYC Goes SAE

The matter has been given no publicity, but truck manufacturers tell us that the City of New York is asking the manufacturers for truck rating data as recommended by the Society of Automotive Engineers. This data, we understand, is being requested now, and will be filed and compared with data subsequently entered in bids.

(Ignorance May Be Bliss, But

It's Folly to Disguise.) Gasoline taxation must be reaching the point where even politicians realize they have reached the limit. In Nebraska it's a misdemeanor for a service station to show on price signs how much a customer pays in taxes on a gallon of gasoline. In Nebraska, Federal and State taxes are equivalent to approximately 50 per cent of the retail price. . . . Or maybe the politicians are working on the theory that what the public doesn't know the public won't protest.

Fun in the Army

There is good humor in a story being told about the Army maneuvers in the South last Fall. The Army unit that was in the West in these maneuvers was constantly able to spot the "enemy" unit which was attacking from the East, and the officers of the East unit were unable to determine how they were being detected so unerringly all during the maneuvers. They went to great pains to hide in the woods each time they stopped and to camouflage their units expertly. The laugh came later when it developed that the Eastern Army was followed by a fleet of Good Humor trucks and the defending Western Army had no trouble spotting these ice-cream peddling "Camp Followers."

8

"Oil's well" if you can match these up properly.

1. Mexia Crude.
2. Pennsylvania Crude.
3. California Crude.
 - a. Produced in limestone country.
 - b. Contains a high percentage of paraffin lubricating stock.
 - c. Complete absence of paraffin base.

9

Test your mettle on this one about metals.

1. Vanadium. 2. Indium. 3. Cadmium.
 - a. Used as a plating to protect surfaces from rust.
 - b. Hardest of all metals.
 - c. Used in treating engine bearings.

10

For the finale—match up these "colorful" engines with the proper trucks.

1. Gold Crown. a. International.
2. Blue Streak. b. Reo.
3. Green Diamond. c. Autocar.

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STANDARDIZATION of the initial spark advance is the first move in obtaining gasoline economy.

So far as our test information goes we find that the manufacturers' standards are rather good. They do not give the maximum performance, but they do give within 2 to 3 per cent of it, and the economy is noticeably better than if the ignition were set for maximum performance.

The next check is on the automatic advance as controlled by speed, or vacuum or both. We find that automatic advance on engines as manufactured varies quite a little, not only between different makes but from vehicle to vehicle of the same make. It therefore appears very desirable to see that adequate maintenance is applied to these two items and the inspection interval is best determined by the operator's own experience with his fleet. It may be noted that there is a tendency on the part of some fleet operators to overdo early spark plug settings. It is not, in general, advantageous to set up the spark for maximum power which corresponds usually with incipient knock. Better average results can be obtained by staying back of this point a little, and, in fact, the manufacturers' standards usually take care of this.

Most carburetors are now arranged to take care of rich idling, correct mixture for part-load conditions and rich full-throttle setting. It appears possible that something might be gained in accepting a slightly rougher idling on commercial vehicles for the sake of getting the mixture leaned out a little at this point. This is espe-

cially advantageous for those operations in which a good deal of idling must be done.

With regard to leaning-out mixtures for general operation, and particularly the part load conditions, it is very easy to overdo the matter. While we do know that economy falls off quite rapidly as the mixture is richened beyond the chemically correct amounts, it appears not to be so generally recognized that it also falls off on the lean side, only not so fast. We have seen fleet operations in which the mixtures were kept so lean that popping-back and misbehavior was occurring. Nothing is really to be gained by such a setting.

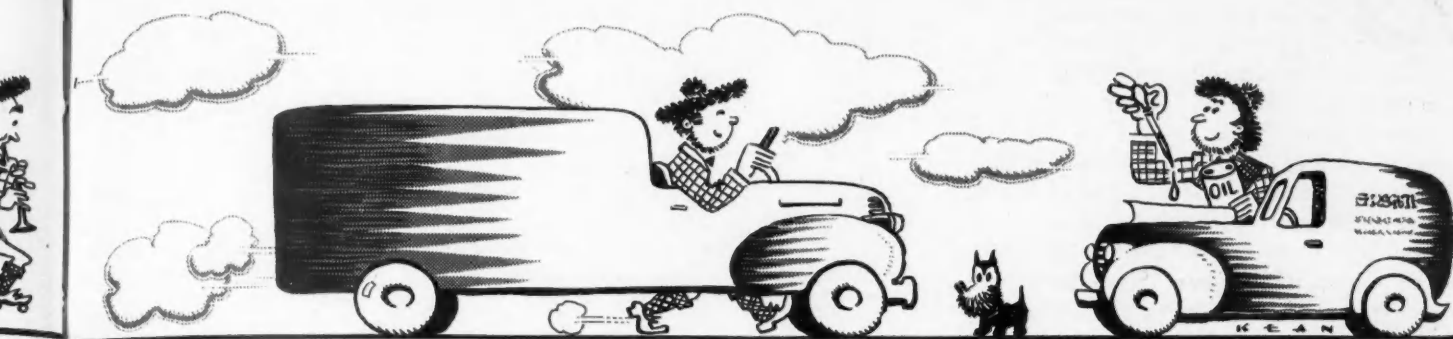
There is a further risk in extremely lean mixtures. It appears to have become common practice to send out engines with rather narrow seats ground on the valves. With the richer mixtures, little or no trouble results but on the lean mixtures, burned exhaust valves can readily occur.

After all, substantially the only way of cooling an exhaust valve is to let it sit down on the cooler seat. If the seat is kept too narrow, the amount of heat transmitted is obviously cut much in proportion to reduction of width of the seat. In our experience, we find it desirable to use a fairly broad seat. It does not seem to give any more trouble with lack of tightness than the narrow seat and is a lot safer for lean mixtures.

Most fleet operators cannot afford to do any extensive research work on carburetion. It would appear to be the better way to limit the research work and put the problem back in the hands of the carburetor manufacturer for correction. It is believed that the carburetor manufacturers can meet almost any reasonable requirement in this respect and are willing to do so. In most cases a fleet operator is more concerned with gasoline economy, and reasonable horsepower that goes with it, rather than peak



DO YOU WANT



You can get economy by . . . checking spark timing and the automatic advance . . . taking carburetor problems to the manufacturer . . . keeping fuel line and tank cool . . . controlling engine temperatures . . . selecting a gas to fit your needs and an oil of sufficient viscosity . . . keeping the oil cool . . . analyzing drainings

by R. J. S. PIGOTT

Staff Engineer, Gulf Research and Development Co., Pittsburgh, Pa.

GAS AND OIL ECONOMY?

performance, which is in general more interesting to the passenger car driver.

Another source of loss is the temperatures, all the way from the gasoline tank and gas lines to the bowl of the carburetor. It is well to keep all of these parts as cool as possible, because the loss may amount to from 3 to 10 per cent of the total gasoline, and in addition since the loss is all from the light ends, the gas actually delivered to the engine may be noticeably less in octane rating than the original gas put into the tank. Keeping the tank protected from the sun, and particular attention to keeping the gasoline lines cool where they pass the engine, and finally keeping the carburetor bowl as cool as possible, can reduce this loss.

Vapor locking was of course associated with hot gasoline lines and insufficient capacity in the fuel pump, but enlarging the pump so that it eliminates vapor locking does not

save the gas evolved because this will be vented at the carburetor bowl. Even the expedient of putting the fuel pump at the gasoline tank so that the lines are under pressure does not eliminate this loss because much will still be vented at the carburetor.

All of us have recognized that there is an upper limit on temperatures, not only for power but also for oil behavior. Obviously the increase in horsepower per cubic inch of the last 10 years has meant, in general, higher temperatures throughout the engine. It appears now to have reached the point where some attention must be given to properly handling the cooling that has been turned over to the oil system instead of the radiator; it now amounts to as much as 20 per cent of the total cooling. We need enough temperature in the manifolds for good carburetion, but anything more than this is usually a loss. We need lower maximum temperatures in the crankcase if we ex-

pect to have oils stay in the crankcase as long as we would like, and also to reduce some of the tremendous margin now existing between starting temperature in the winter and general operating temperatures.

Until the last few years, insufficient thought has been given to the fact that there was also a lower limit in temperature for gas and oil. For the fuel, low temperatures mean poor carburetion and rich mixtures, and along with these, increase in corrosion effects on the engine due to operating at too low a cylinder wall temperature; but low temperature can be worse even for the oil.

It has been found that temperatures below about 140 deg. in either the jacket or the crankcase are apt to result in bad winter sludge and it does not make any difference what make of oil is in the crankcase. This trouble will occur all the way from the poorest to the best oils. The best
(TURN TO PAGE 98, PLEASE)



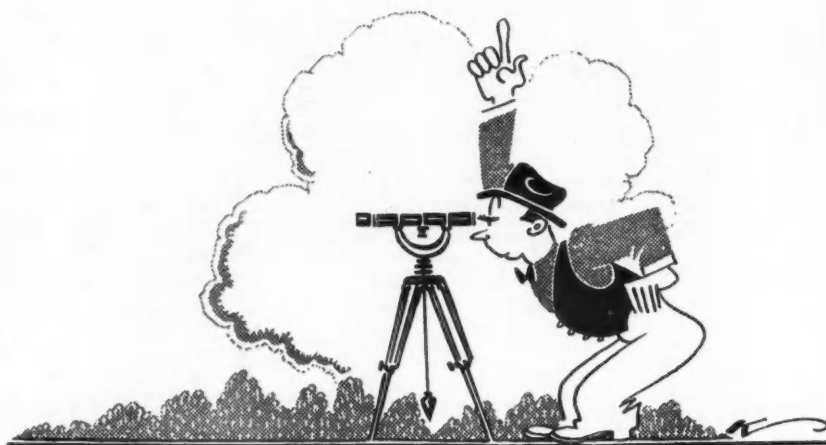
ALMOST every substance imaginable has been tried as brake lining by persons of varying responsibility but the manufacturers who really supply the industry's brake lining settled upon asbestos as the major ingredient a good many years ago and so far have found nothing to replace it. To make woven lining, they use long fibre asbestos spun into a yarn. Since the asbestos fibres are not strong enough they are combined with cotton, but there is about 4 lb. of asbestos to every pound of cotton. This yarn is woven into brake lining in several different ways after being treated.

In the molded lining, short-fibre asbestos is mixed with bonding ingredients resulting in a dough-like mass that is eventually heated, pressed and ground to brake lining. No matter what type of brake lining or what process of manufacture, asbestos is still the most important ingredient because of its resistance to heat.

Added to the asbestos are the binders to hold the whole business together. These may be one of the phenol resins, similar to bakelite, tar or oil. Just what binder or combination of binders is used varies with the manufacturers and with the purposes for which an individual type of brake lining is to be used.

Fillers must be added to give the lining proper bulk without changing its desirable characteristics or to change them along certain lines only. Friction stabilizing elements are needed to provide the correct frictional qualities for the various types of lining. Graphite may be used to lower the friction value and powdered zinc or brass particles or other metal have generally the opposite effect.

Increasing or reducing the friction value is not the only reason for adding the powdered metals. In some quarters at least it is the belief that the metal content contributes to longer brake lining life. Because of this belief, there is a trend towards adding more metal to brake lining although the practice is by no means universal. The lining manufacturers who use metal may have as low as 5 per cent by weight and as high as 50 per cent by weight in heavy-duty lining. The enthusiasts believe that it may eventually become a guess whether it is a case of asbestos lining with some metal or metal lining with



by HENRY JENNINGS

Technical Editor, Commercial Car Journal

Bringing Fleetmen up to date on recent brake lining developments and on methods recommended for getting better stops and longer lining life

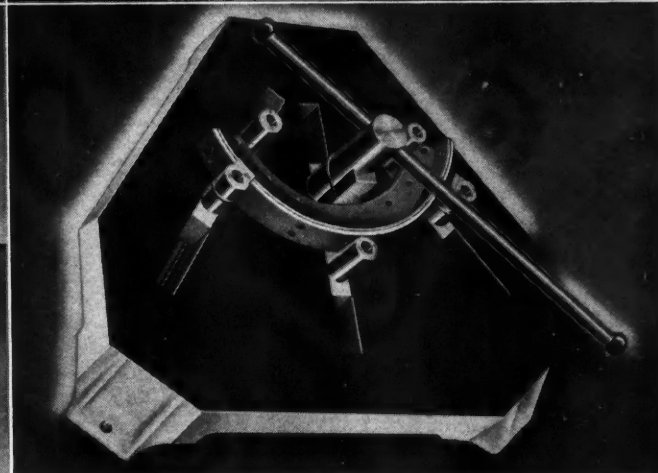
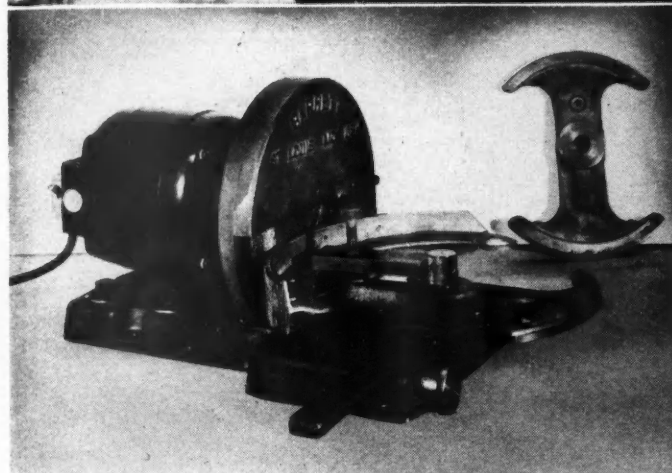
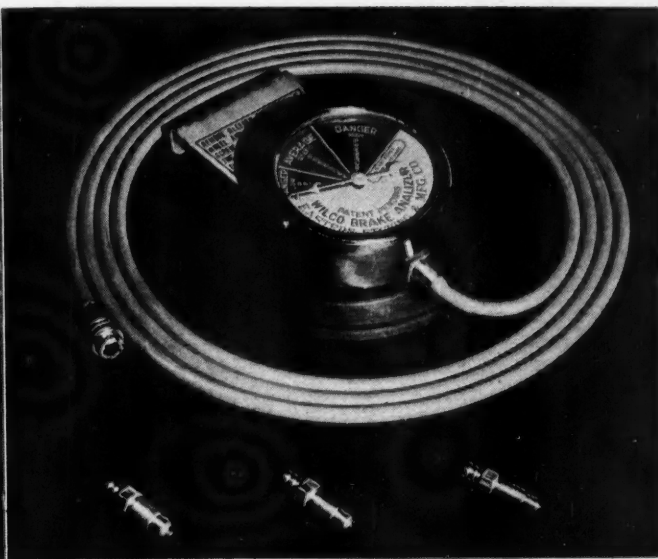
GETTING A LINE

some asbestos. The opposite viewpoint is that every manufacturer has experimented with metal in lining, that the idea is not new and has long been discarded by some manufacturers. Further those who look upon metal in brake lining with less than favor feel that even if the idea proves successful there may be a tendency to rush into it too fast with the usual penalties of haste.

Some metals have the definite purpose of reducing wear or scoring of the drums.

The all-metal lining of which we

hear so much and never see at present on brakes seems to be entirely experimental. Experiments have shown that its life is good but that it does not provide enough friction. In addition the frictional characteristics change sharply with difference in temperature, all of which does not paint too rosy a picture. It was used in the late 1920's on a series of trucks and all in all gave a good account of itself at low speeds but at high speeds and temperatures the lining fused to the drum. However, metal clutch facings are now successfully used. As a



Various types of equipment used for thorough brake maintenance are shown above. Top left: Portable unit that

grinds lining with shoes in position using spindle for center. Lower left: Bench-type lining grinder. Lower

right: Brake shoe re-arching machine. Upper right: Device for testing hydraulic pressure at the wheel cylinder

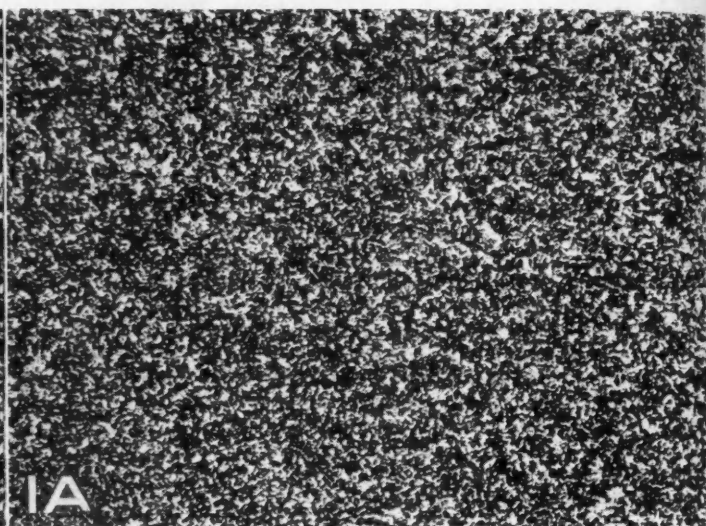
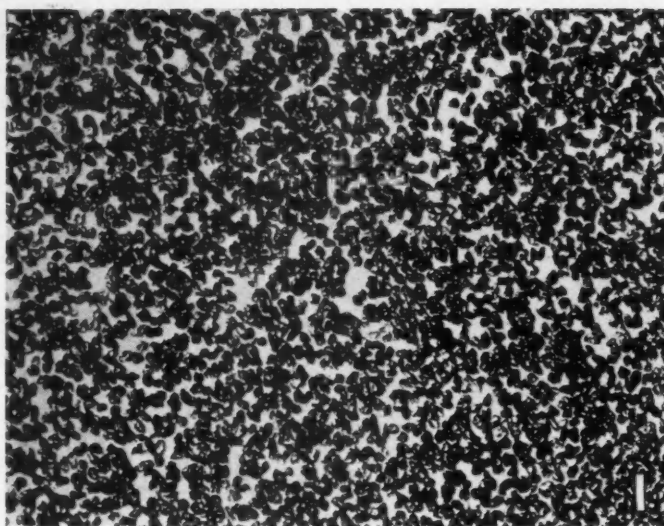
ON BRAKE LINING

lining for clutch plates it has been found that its chief drawback is that it must be bonded to a dissimilar metal, if for no other reason than to give it strength. The expansion properties of the stronger metal are different than those of the lining and when the temperature fluctuates, as well it must, the lining may check and break off. The cost of all-metal lining is about three times that of asbestos base lining and they are heavier so that its use requires that design of clutch and transmission be adequate to handle the additional

weight. The rotation of the additional weight also causes some slowing up of the shifting process.

It is impossible to find a brake lining man who does not believe that woven lining will always be with us. They point to the older vehicles and some of the new ones where an extremely high friction is required. The porosity of some types of woven lining gives it a higher friction value than most molded linings. Also it is claimed that woven lining handles water, snow and mud better than molded lining.

There are really two types of woven lining. One a solid, rigid block that has been treated, compressed and cured. The other type is the older type and is flexible. The first type in rigid block form is made for use on modern vehicles with power brakes to withstand high pressures and temperatures. This type gains its high friction from treatment. Its reason for existence is because of the strength provided by weaving. The older type of woven lining depends upon porosity for high friction
(TURN TO PAGE 92, PLEASE)



GRIT AND BARE IT

Choose the correct grit number of abrasive and the right tool to bare truck surfaces for painting and grin and bear lower costs



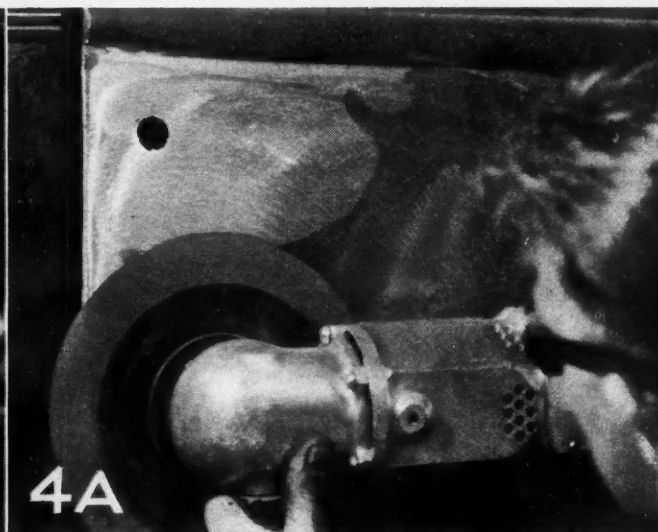
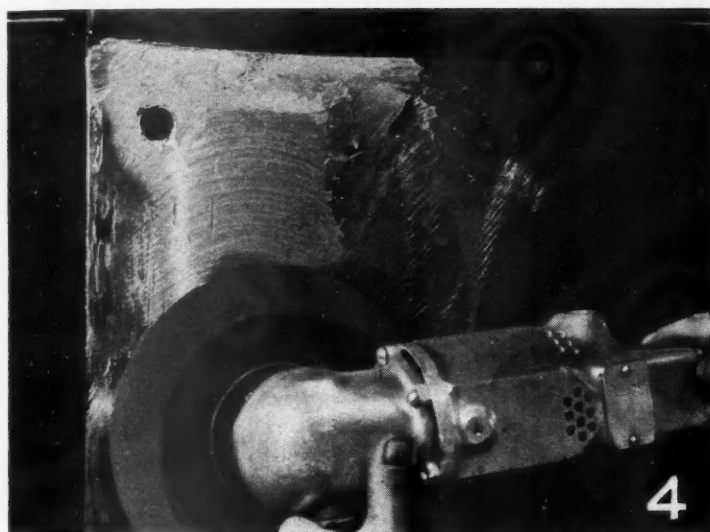
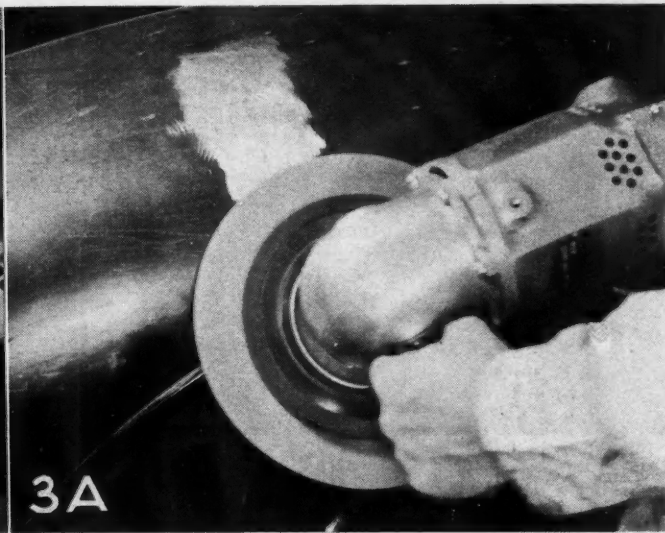
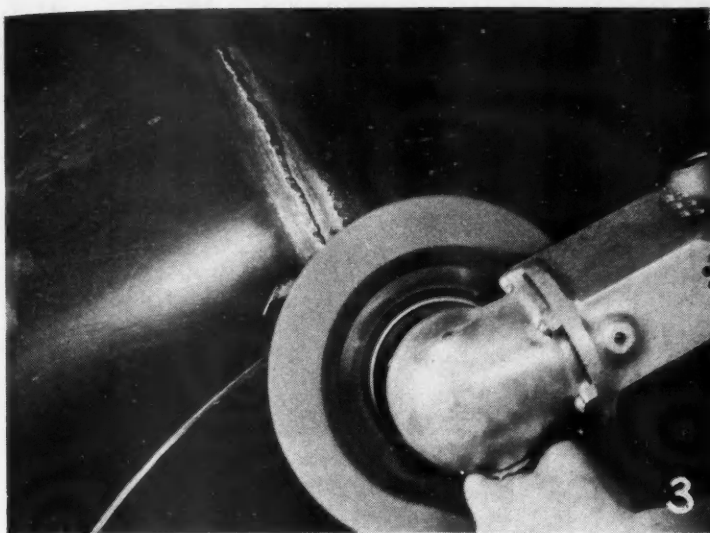
MACHINE sanding is absolutely essential to the economical preparation of surfaces for painting except where hand sanding is specifically recommended. The purpose of this pictorial article is to show the correct use and application of power sanders and

also to provide information on the correct selection of abrasive materials, which is equally important.

In addition to using machines and the correct abrasives for preparing the surface for paint it is necessary to have the correct pad. A hard felt pad is suggested for metal sanding

while a rubber or neoprene sponge pad should be used for finishing sanding, featheredging or sanding paint.

When machine sanding either cloth or paper-backed abrasives may be used in the same grit sizes recommended for hand use.



Photographs and Data Courtesy Minnesota Mining and Manufacturing Co.

FIGS. 1 and 1A show the difference between "open-coated" and "closed-coated" abrasive. Both types are made by bonding abrasive grains to a backing which may be one of several materials. The grains are carefully graded as to size, which is referred to as Grit Number. Open-coated abrasives have the abrasive particles spaced some distance apart to avoid loading or filling when removing old paint or solder. Closed-coated abrasives have a more compact coating of abrasive particles for sanding metal welds and harder materials

FIG. 2. To speedily remove old paint use an open-coating No. 16 grit abra-

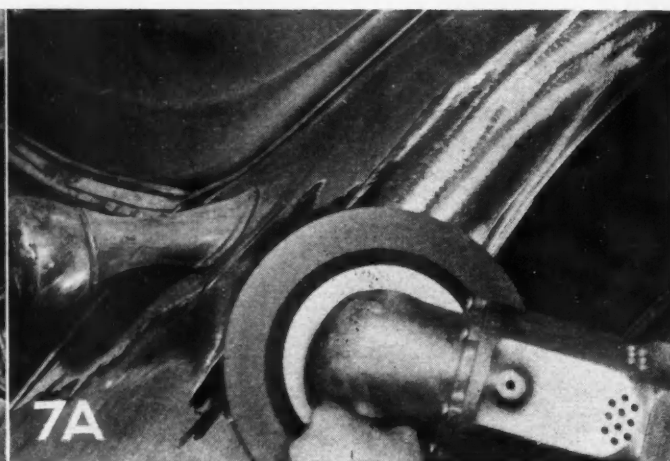
sive. Hold the disk at a slight angle to the work and with even strokes remove paint until bare metal is reached. Follow with close-coating No. 24 grit abrasive and then for further smoothness with closed-coating No. 50 grit abrasive. Following with hand sanding using cloth-backed No. 150 grit abrasive on a rubber block and for feather edging a light paper-backed abrasive No. 20 or 280 grit with water

FIGS. 3 and 3A. To cut down are welds use a No. 16 grit closed-coating abrasive. For acetylene welds use a No. 16 or No. 24 grit closed-coating abrasive. Follow, using No. 24 grit closed-coating abrasive and then a No.

50 grit closed-coating abrasive. Then hand sand with a cloth-backed No. 150 closed-coating abrasive on a rubber block and featheredge with No. 320 or 280 grit abrasive with water

FIGS. 4 and 4A. To cut down solder spots to body metal use a No. 16 grit open-coating abrasive. Follow this operation using a No. 50 grit closed-coating abrasive to gain added smoothness. This operation should likewise be followed by hand sanding with No. 150 closed-coating cloth-backed abrasive over a rubber block and then wet sand with No. 320 or 280 abrasive.

(CONTINUED ON NEXT PAGE)



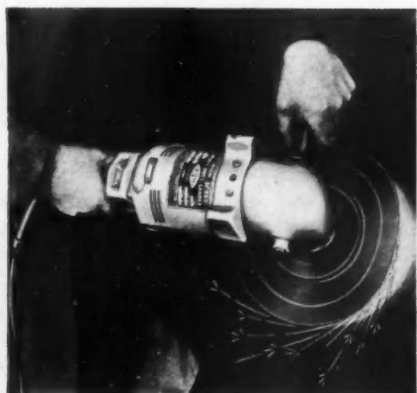
GRIT AND BARE IT (Continued from Page 25)

FIGS. 5 and 5A. The fastest way to condition a straightened spot is to apply No. 24 grit closed-coating abrasive. To remove the scratches left by the coarser grit follow with No. 50 grit closed-coating abrasive. To finish hand sand with No. 150 grit cloth-backed closed-coating abrasive and finish the job by wet sanding with No. 320 or 280 paper-backed abrasive

FIGS. 6 and 6A. There is danger of

cutting into the bead or reveal if the power sander is used too close to it. The most convenient method of treating these areas is to hand sand them with No. 150 grit cloth-backed abrasive wrapped around a flexible file. This method will save time and avoid damage. It should be followed by the same finish hand sanding as followed the power sanding on other areas using a No. 150 grid abrasive.

FIGS. 7 and 7A. To remove large areas of rust use No. 24 grit closed-coating abrasive and follow with No. 50 grit closed-coating abrasive. Then hand sand with No. 150 grit closed-coating cloth-backed abrasive over a rubber block and featheredge with No. 320 or 280 paper-backed abrasive with water. Small spots can be prepared by water hand sanding with 320 or 280 paper



The Sioux 9-in. sander turns at 5000 r.p.m.; also handles 5 and 7 in. discs. It is made by Albertson & Co., Inc.



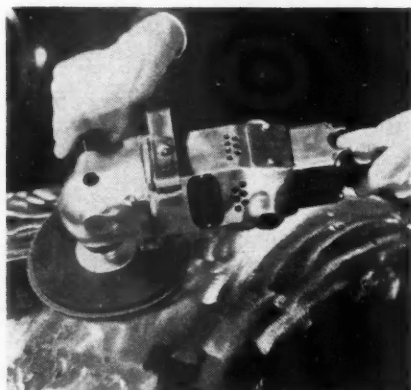
The two-speed Snap-On sander operates at 2700 or 4200 r.p.m. Small button at top is the gearshift lever.



Sterling's "Gyro Electric" sander is a light-duty job and supplements the company's line of air-operated units.



creates a "ping" spot will often loosen paint. Hammer down the high spots and grind out irregularities in the area with No. 24 grit closed-coating abrasive. Follow with No. 50 grit closed-coating abrasive for added smoothness and then hand sand with No. 150 grit cloth-backed abrasive. Featheredge the area by water sanding with No. 320 or 280 grit closed-coating abrasive on a rubber block



Black & Decker's 7-in. heavy-duty ball-bearing sander is representative of this company's large line of sanders.



This light-duty model by U. S. Electrical Tool Co. is also part of a big line. The side handle is reversible.



The "Easy" reciprocating sander, by Detroit Surfacing Machine Co., uses 1/3 of square sheet, weighs 6½ lb.

SHOP HINTS

FROM FLEET SHOPS

1. Wheel Stand

By Nick Jerger
Milwaukee Novelty Dye Works,
Milwaukee

We are a little cramped for space in our shop so it was impossible for us to use any fixture for holding wheels for demounting tires that we were able to buy. We made one of odds and ends from our junk pile that works very well. The drawing shows about how it is constructed.

2. Gasket Cutter

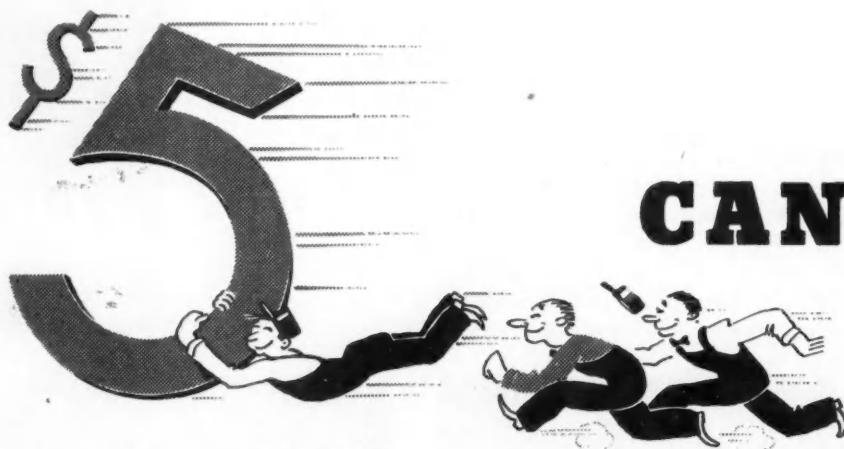
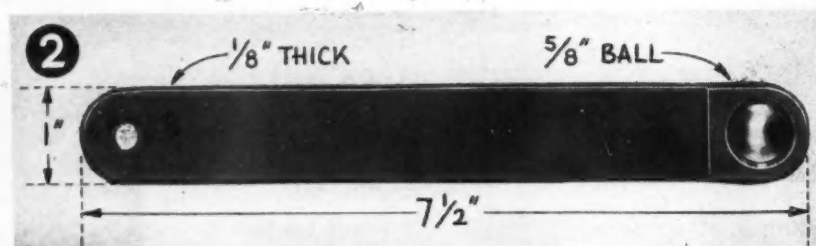
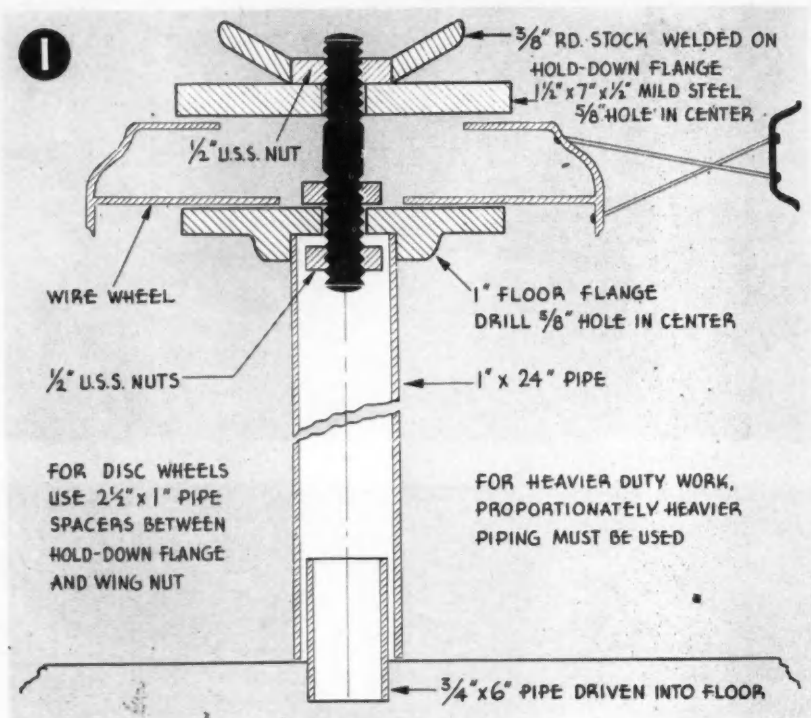
By Frank Anderson
Ashland, Wis.

Cutting small round holes in gasket material has always been a problem and using a ball bearing is an old solution but we have improved on that idea a little I think. We took a piece of strap iron about 7 in. long, drilled one end of it to hold the ball and countersunk it on one side. Another short piece of strap iron was similarly treated and then the two pieces were welded together to make a seat for the ball in which it floats. A little grinding and the job is done.

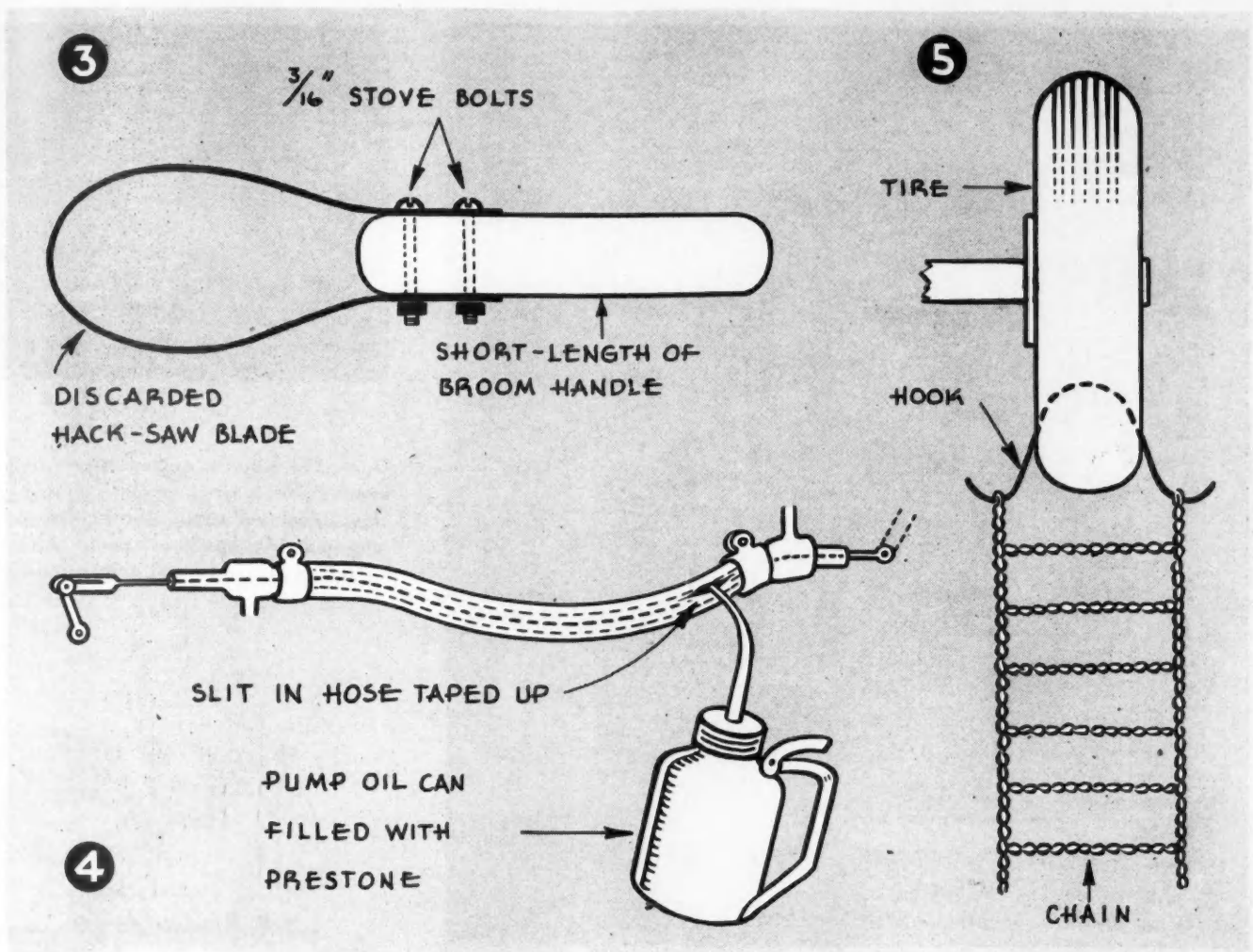
3. Carbon Scraper

By Paul Reisert
General Baking Co., Louisville, Ky.

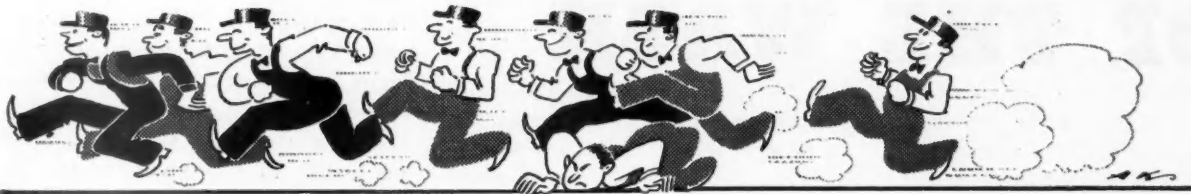
The sketch shows a tool that we have made to remove the hard and gummy deposits from valve guide openings on Ford engines although we use the tool on other engines. All that is required is a short piece of broom handle, an old hacksaw blade and a couple of stove bolts. We have tried several tools of our own make and several that we have bought but this one tops them all.



Commercial Car Journal pays \$5 for each shop hint accepted for publication on these pages. Simply send in the idea which you believe to be original. Don't worry about style. Acceptance is based on the idea. CCJ will edit it for publication



YOU USE FIVE DOLLARS?



4. Brake Cable Conduit

By E. W. Bennett, Ottumwa, Iowa

We have a bunch of vehicles with hand brakes operating shoes in the rear drums by means of a steel cable. In summer the cables rust and get stiff and in winter they freeze since the conduits are not completely water tight. To cure this we remove one end of the cable and bracket and slip

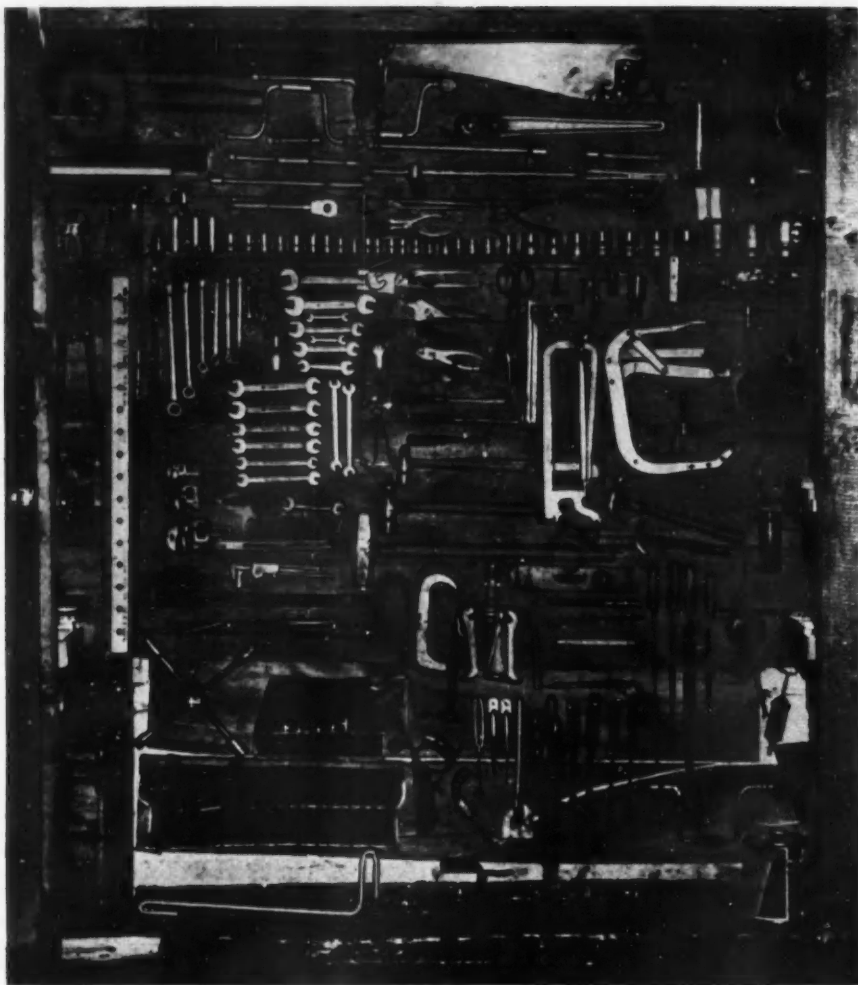
a short piece of $\frac{1}{2}$ -in. heater hose over the conduit between the brackets and fasten it with hose clamps. Then we slit the hose with a knife. A little oil in summer and anti-freeze in winter does the trick. Tape closes the slit.

5. Chain Hook

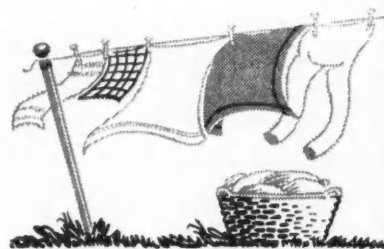
Wilber L. Haddock, Manchester, N. H.

It is a little late for chain hints but

this one may be worth filing away for use next season. We had the usual tough time getting chains installed on vehicles with the new type fenders. We solved it by making a hook of heavy-gage wire as shown. Just connect the chain ends to the hook and back the car. Chains will be pulled around ready to snap the latches.



Left: The shop's well-equipped tool board forms part of a series of lockable metal cabinets. Above: Driver-salesman Tom Maddon stands beside one of the fleet's newest delivery units



IN THE WAKE OF THE WASH

Back of the Wallach laundry fleet is a shop, compact, well-stocked and equipped and a maintenance routine geared to big-city delivery demands

by KARL GULICK

Fleet Superintendent, Wallach Laundry, Inc., New York



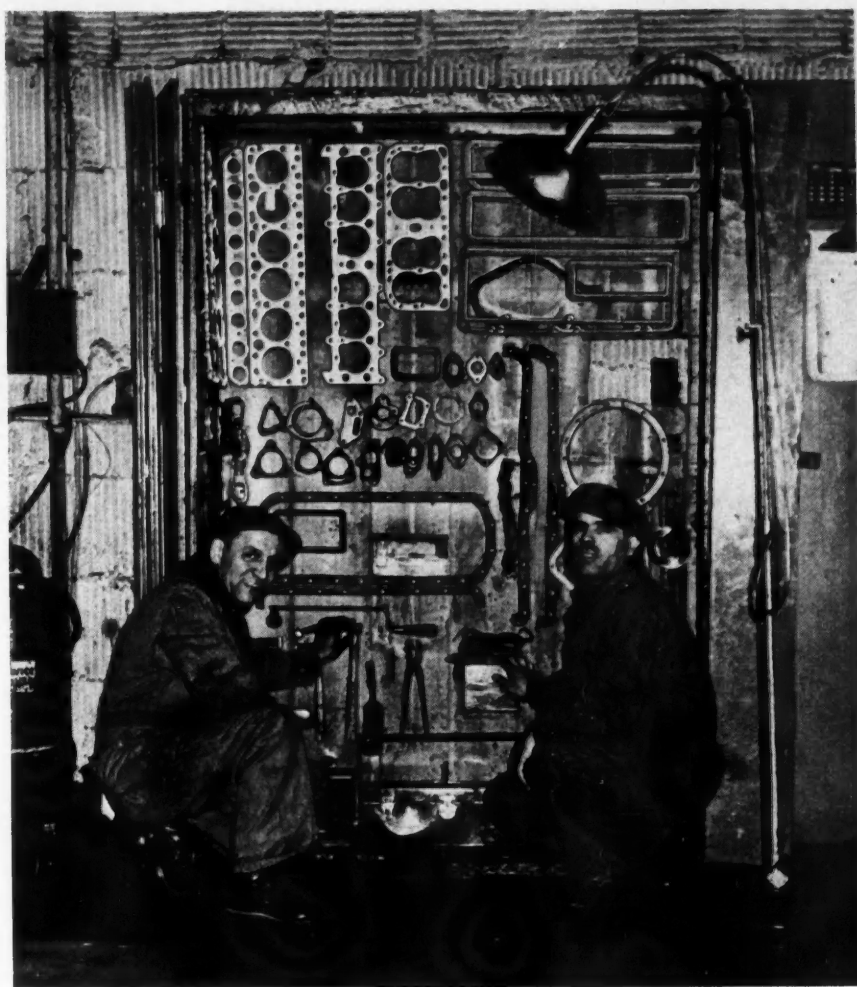
UNDER the shadow of the Queensboro Bridge, space is at a premium.

What there is of it is more vertical than horizontal. But long before traffic became a problem, J. G. Wallach founded the Wallach Laundry and set up headquarters on East 59th right in the heart of up-town Manhattan. Clientele of the laundry, though stretched in steadily expanding orbits into Westchester County and out Long Island way, is still largely concentrated in Manhattan. Consequently it has not been found practical to move the plant from its old address. The eight-story building provides adequate laundry facilities and so we have turned to the task of making the best of our quarters from the standpoint of delivery.

In spite of a loading dock that accommodates but one truck at a time, we load 40 trucks every morning in less than two hours, all without congesting traffic on one of the city's



Above: The hinged poster frame makes sign changing a matter of seconds. Right: Shop foreman Jim Barada, Mechanic Perez and gasket board. Note the shop-made all-purpose lamp.



busiest cross-town streets. The secret is in accurate timing, plus pre-loaded hampers that can be rolled onto the trucks to form a complete load in about 2½ minutes. Before they leave at night, drivers load their hampers from route bins and roll them to convenient storage space on the first floor. In the morning, drivers report for work on a progressive schedule, picking up their loads in rotation. At no time do we allow more than five trucks at the curb at any one time.

Although we are still running some trucks that date back as far as 1932, all of our new equipment is of the modern package-delivery type with maximum capacity bodies. Since our old equipment had special bodies, the new ones provide no more cubic feet of space, but their overall length is considerably shorter, providing a material advantage in the storage garage and in maneuverability on congested city streets. Most of the component units are smaller and con-

sequently cheaper to replace, but the smaller tires wear faster and we do not find much difference in the overall operating costs.

Because of the unusually cramped quarters at the loading dock all of the older trucks are equipped with tailgates and an upper unit that swings into adjacent traffic lanes. Many of the older trucks are further equipped with a mechanical device, rigged up in our own shop, which permits raising and lowering of the tailgate from the driver's seat thus eliminating the need for the driver to get out as he approaches the loading dock. This device also does away with tail-gate chains and locking mechanisms. On the newer units, upward sliding doors exactly meet our requirements.

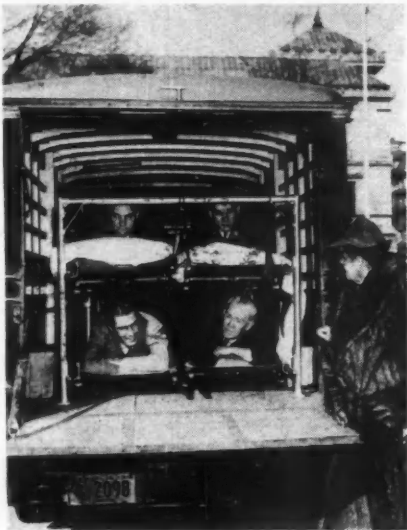
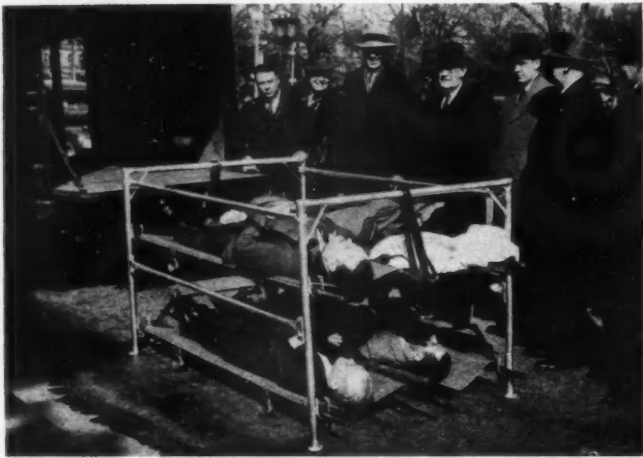
On the route, trucks are unloaded principally from the front. Of interest is the fact that our hamper-load arrangement precludes the use of a well-type driver's compartment since this would place the driver too low

to see or conveniently reach his load.

For garage and maintenance facilities we rent the second and third floors of a public garage next door. Two large elevators with doors opening on the street plus the entrance to the ground floor takes care of the incoming trucks as fast as they normally arrive. Each truck is gassed from one of two pumps at the building line by a garage attendant. Our drivers sign duplicate receipts for the number of gallons delivered. Trucks are then placed on the elevators and lifted to our storage space on the upper floors. From there on all maintenance, with the exception of washing and polishing, is handled in our own shop, located on the second floor.

Washing and polishing is done at night by the garage on a contract basis which calls for an average of one wash every three days for each truck. Naturally the routine is broken to care for particularly dirty

(TURN TO PAGE 74, PLEASE)



TRUCK-AMBULANCE CONVERSION UNIT

IN peace time as well as war time every community is subject to an emergency call for many more ambulances than it is able to provide. Disaster may strike at any moment maiming hundreds of persons, sudden accident may cause injuries to scores. Ability to provide adequate transportation for the victims in such cases may spell the difference between life and death, complete recovery and permanent disability on the part of great numbers.

In order to meet just such occasions adequately, Mabel T. Boardman, secretary of the American Red Cross and for many years head of Red Cross Volunteer Special Services, has devised an inexpensive truck-ambulance conversion unit which makes it possible to turn ordi-

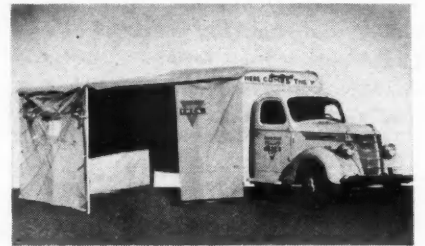
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BODIES OF THE MONTH



EDITOR'S NOTE

Trucks are playing a big part in the National Defense effort. The two described and illustrated on these pages might be termed by-products of the war. One was devised by the American Red Cross; the other by the Canadian YMCA.



MOBILE CANTEEN FOR THE CANADIAN Y.M.C.A.

AN interesting by-product of the war is the development by the British of "tea cars" or mobile canteens. Nearly 500 of these cars are now in use in England where they have been highly effective in serving workers in bombed areas—frequently under actual bombardment—and in visiting troops stationed at isolated outposts or accompanying troops on maneuvers.

For use by the Canadian Y.M.C.A. in Canada, Wilson Motor Bodies, Ltd., Toronto, Ontario, has designed and built a fleet of five tea cars which will be used in large army camps and in visiting the many outposts along Canada's Atlantic coastline. The cars will be used to carry supplies with which to entertain the men, such as radio, moving picture equipment, games, etc., and are equipped to serve hot tea and biscuits to as many as 500 men at one time.

The specially-designed body has interior dimensions of 8 ft. 6 in. x 6 ft. 8 in. x 5 ft. 2½ in. and is made of 20-gauge stretcher-leveled auto body sheet steel on a Canadian white oak

(TURN TO PAGE 70, PLEASE)

FOUR important groups in the motor trucking industry introduced testimony at the ICC hearing, which began on May 19 before Examiner R. W. Snow at the Sherman Hotel in Chicago, relating to the ICC regulation of hours of service of mechanics, loaders and drivers' helpers employed by common, contract and private carriers engaged in interstate operations. The four groups were for-hire carriers, private carriers, passenger carriers, and employe labor unions.

These groups differed in opinion as to the desirability of ICC regulations; and the chief clash was between the extreme views of the common carriers favoring full extension and the labor unions opposing such extension.

Examiner Snow, in his formal introductory remarks, briefly reviewed the ICC decision of March 4 which had brought mechanics, loaders and drivers' helpers under ICC jurisdiction; and also the recent holding of the Wage-Hours Division that such workers would not be exempt from the Division's rulings until after the ICC had prescribed specific regulations.

Examiner Snow emphasized that evidence should be submitted at the hearings on the two following subjects: (1) what regulations, if any, should be prescribed, and (2) will safety of operations be promoted by such regulations? H. H. Kelly, Chief of Division of Safety, ICC Bureau of Motor Carriers, sat in at the hearings; and also a stenographic reporter for the Wage-Hours Division. As an interesting sidelight to the hearings, there was comment by several operator witnesses to the effect that it is becoming increasingly difficult for the motor truck industry to retain automotive mechanics and to hire competent new ones, in competition with U. S. Army enlistments and defense industry.

All witnesses representing the common carriers were favorable toward the same kind of ICC regulation for mechanics, loaders and drivers' helpers that are now in effect for drivers. The first bombshell which was dropped on this trend came during the cross examination by counsel for the labor unions, when it became evident that the unions wished rather

(TURN TO PAGE 58, PLEASE)



ICC WEIGHS HOURS FOR NON-DRIVERS

For-hire carriers, at Chicago hearing, favor same regulations for mechanics, loaders and drivers' helpers as for drivers. Unions prefer wage-hours law

by **RANDALL R. HOWARD**

Commercial Car Journal Special Correspondent



Brake symposium panel was composed of the men above. They are, l. to r.: Fred Hall, Bendix-Westinghouse; J. L. S. Snead, Jr., Consolidated Freightways; Karl Walker, ICC; V. M. Drew, Fruehauf, and Fred Lautzenhiser, International Harvester.



INFORMED speakers and an alert, cooperative audience of fleetmen, numbering close to 400 from 30 states, combined to stimulate practical discussions and to make a success of the second annual spring Safety and Operations Meeting of the American Trucking Associations, Inc., at Kansas City, Mo., May 4 to 7.

At the opening session Ted V. Rodgers, president of A.T.A., struck a note of critical self-appraisal that was maintained throughout the meeting and contributed to its interest. Mr. Rodgers said that in his jaunts around the country he makes a practice of stopping whenever he can at roadside diners patronized by truck drivers.

"I hear some very interesting conversations," said Mr. Rodgers, "and if what I hear is true then the industry is not living up to the hours of service for drivers laid down by the Interstate Commerce Commission. From what the drivers say there must be a lot of doctoring of I.C.C. logs on the hours the drivers work. I just want to warn the guilty ones that they're not kidding anybody." (The laughter that went up from the audience at the unexpected frankness indicated that Mr. Rodgers had made a bull's-eye.)

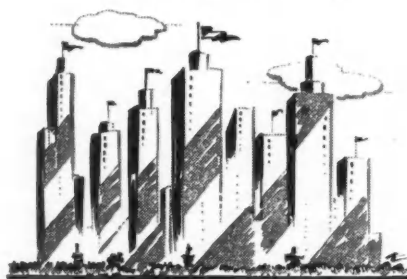
Another criticism that Mr. Rodgers made was of the practice of trucks tailing one another, and making it inconvenient for faster vehicles to pass them.

"Keep your trucks apart on the

A.T.A. SAFETY

Prevention of accidents and maintenance of equipment held the spotlight in a three-day session marked by lively discussion and critical self-appraisal

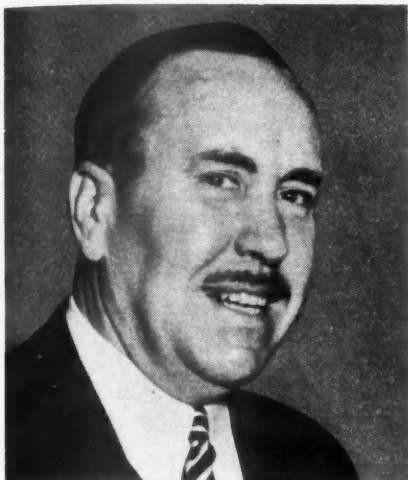
KANSAS CITY
WELCOMES
A.T.A.



highway," he said, "and help us earn the good-will of the public."

Norman Damon, director of the Automotive Safety Foundation, praised the trucking industry for its safety record but pointed out that it cannot rest on its record.

"With America the arsenal for democracy," Mr. Damon said, the highways become conveyor belts for transporting men and materials in the national defense. Defense needs have brought a fresh, impelling urgency for safe, fast-moving traffic.



Left, above, is the meeting's guiding genius, Charles G. Morgan, Jr., of the ATA and secretary of its Safety and Operations section. At the rostrum is President Ted V. Rodgers sounding the convention's key-note of critical self-appraisal.

AND OPERATIONS FORUM

Never before in our history has the efficiency of our highway transportation system been so vital. In the light of national defense, every accident may be called unintentional sabotage. Accident prevention effort, individually and collectively, becomes not only good citizenship but good business, so to be better citizens and better business men, we've got to get better."

The sessions that followed showed that fleetmen of the trucking industry were disposed to take Mr. Damon's advice, and through self-appraisal to seek self-improvement.

Views on "Scientific Testing of Drivers for Safety" were presented by Harry Hunter, safety engineer, Truck Insurance Exchange, Los Angeles, Cal. He described devices used to get the reaction of drivers to various eye tests, and gave the results of tests. He gave evidence to show that drivers react differently to different colors, and that poor sunglasses have a decided effect on driver vision. With cheap sunglasses, he said, estimation of distance in combination with different colored objects varies radically from clear vision. He advocated the use of good sunglasses on the amber or black side.

The practical value of the tests de-

scribed by Mr. Hunter was questioned by W. E. Billings, fleet engineer, Liberty Mutual Insurance Co., Boston, Mass. Mr. Billings said that his company had eye-tested 1400 drivers and that the results of the tests did not correlate with the accident records of the drivers. Many drivers whose tests were good had bad accident records, and many drivers whose tests were poor had excellent accident records. Mr. Hunter did not dispute the lack of correlation.

Selection and management of personnel was discussed by R. N. Christensen, director of safety and personnel, Southern California Freight Lines, Los Angeles, Calif.

"First," said Mr. Christensen, "we have the elimination of applicants obviously unfit for the job at hand. This can readily be accomplished by a simple application form designed to show whether the applicant meets the fundamental requisites of the job to be filled.

"If he warrants an interview there are four phases leading to a determination of his suitability. First, an intelligence test. This is the well-known I.Q. test. But the intelligence expected should be in conformity with the job to be performed. Too

high an intelligence is just as bad as which is too low.

"Second, physical examination. This must, of course, conform to I.C.C. requirements.

"Third, examination of manual skill on the job to be performed. Our line of work in the trucking industry is readily adaptable to a skill test directly in the vehicle. A practical method would be to set up at the plant a series of maneuvers similar to those the driver will be expected to perform.

"Fourth, study of the applicant's temperament. The subject of temperament in the selection of employees is one which is becoming more and more important in business. I purposely leave the application form brief so that the major portion of the applicant's history and background can be brought out in the personal interview. In using the interview to also determine temperament, the following points should be covered:

"1. Is he conservative and stable or nervous and flighty?

"2. Is he self-centered and shows lack of consideration for others?

"3. Is he alert with considerable drive, or listless?

(TURN TO PAGE 120, PLEASE)



ALTHOUGH our firm, the Malcomson Coal Co., of Detroit, had a half-century of business experience behind it, the cost accounting methods on transportation had not kept pace with changing competitive conditions. So in 1937 we began an intensive study of our trucking operations with a view to effecting economies in that department of the business. We wanted to know whether it was more profitable to have more of our deliveries made on a contract basis with outside truckers or to build up our own fleet of trucks.

Except for original expenditures for equipment and monthly outlay for labor, gas, oil, and repairs, it was impossible to make even a reasonably accurate estimate of delivery costs. However, our yard was being operated under an American Federation of Labor contract on a piece-work basis and we had to keep accurate delivery records on each driver for wage payments. So we devised a simple weekly delivery sheet (Fig. 1) which would serve the dual purpose of recording the drivers' deliveries in order to determine his weekly wages and of keeping a record of the costs of each company truck. This form is printed on light cardboard sheets each 11¾ in. x 9 in. The reverse side is merely a continuation of the delivery entries.

The company maintains its own gasoline pump and oil supply, which is economical by permitting purchase at wholesale. Whenever a truck is serviced for gasoline or oil, a 6 in. x 3¼ in. ticket (Fig. 2) is made out recording the amount used, number of the truck, and the mileage on the truck speedometer. A copy of each gas and oil ticket goes to the accounting department so an accurate check can be kept on fuel costs. The amount of gas and oil used is then entered on the weekly delivery sheet for that particular truck. Cost of radiator alcohol and grease is recorded in the same way. So that the monthly records will be exact, gasoline tanks are filled on the last day of each month or the first day of the following month, thus assuring that the mileage will be recorded for the company files on the gas slips.

The mechanic who services the

A COAL COMPANY KEEPS COSTS

Comparative records kept on simplified forms help to effect vital savings in delivery operations



by J. L. NEWBOLD

President, Malcomson Coal Co., Detroit, Mich.

company's 11 trucks works on a monthly basis. He does general maintenance work, such as greasing, replacing batteries, spark plugs, and tires, putting on brake drums, replacing small parts and doing minor repair jobs. He records the amount of time devoted to each truck, and submits a daily report to the Accounting Department. Labor service costs are then computed for each truck on this basis. When new parts are purchased, the invoices are marked with the number of the truck for which they are intended and the costs are allotted to that particular truck by the Accounting Department. Likewise, when major repair jobs

have to be done in an outside shop, the particular truck is charged with the costs. Parts taken from stock also are charged to the individual truck.

Coal delivery slips (Fig. 3) are made out in quadruplicate, with one copy for the driver, one for the customer, one for the Accounting Department and a receipt copy for the file. Dimensions of the delivery slip are 5½ in. x 5½ in. A girl in the office keeps the weekly delivery sheets up-to-date by recording daily the deliveries made by each driver from the delivery slips. Weekly wage totals also are computed from these sheets, with the driver keeping

MALCOMSON COAL CO.

Truck No. 20 Driver Sherrard Harris Week Ending 1/20/41

SPEEDOMETER

Start 28,500 Mi. Finish 35,798 Mi. Total 278 Mi. COST PER MILE .152

Total—Tons 66 Wagon 181.18 Wheeling 6.08 Operation 5.07 COST PER TON .64

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Total	@	Total
Gasoline—Gals.		12 1/2			13	14 1/2	40	.12 3/4	49.3
Oil—Qts.						1	1	.135	.14
Alcohol—Qts.									
Grease—Lbs.									
Repairs									5.07

Date Ticket No. ADDRESS Tons Rate Del. Wheel

24	65601	13266	1	.00	.00	1
24	65600	242	1	.00	.00	1
24	65625	1271	2	.00	.00	2
24	65661	7422	2	.00	.00	2
24	65666					
24	65667					
24	65668					
24	65669					
24	65670					
24	65671					
24	65672					
24	65673					
24	65674					
24	65675					
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24	65688					
24	65689					
24	65690					
24	65691					
24	65692					

MALCOMSON COAL COMPANY

14400 LIVERNOIS AVE. TOWNSEND 6-1111

DELIVER TO **FIG. 3**

ADDRESS _____

CHARGE TO _____

ORDER WEIGHTS _____

TARE _____

NET _____

NET _____

WEIGHED BY _____

DRIVER _____

CHARGE _____ PAID _____ C.O.D. _____

TRUCK NO. _____ COLLECT _____

Sales Tax _____ Labor _____ Total _____

Customer's Copy No. 74945 Signed _____

S. S. No. _____

Sold to _____

Address _____ License No. _____

Make of Car _____

ARTICLE PRICE AMOUNT

GASOLINE

OIL

GREASE

ALCOHOL

FIG. 2

6968-5J

GOODS RECEIVED

Purchaser _____

Per _____

These three forms provide the basis of Malcomson's simplified accounting system. Each is explained in the article. Typical of newest equipment is dump truck at left. The six-ton load may be divided into two, three or four sections.

his copies of the delivery slips as a check for accuracy.

Truck costs on a monthly basis (Fig. 4, Page 82) are compiled by the accountant from the weekly delivery sheets. He also allots to each truck the insurance cost, which is divided into 12 parts for a monthly breakdown; the license plates, one-twelfth of the cost being assigned to each month, and the depreciation rate, which is computed on a four-year retirement basis. Tire, labor and material costs also are computed monthly.

At the end of the first month of operation under this plan, some startling facts were evident. Dif-

ference in the efficiency of the various trucks was apparent, indicating at once that the older, slower units traveled fewer miles, carried fewer loads, operated with less efficiency and were too costly.

A breakdown of costs on a recent winter month revealed the data shown in Fig. 5, Page 82. Each of our eleven trucks is identified by the letters "A" to "K."

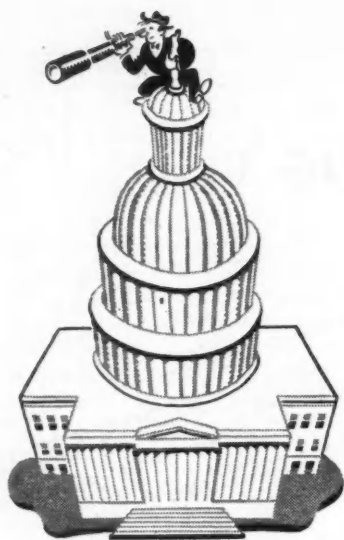
From this data, especially when compiled over a period of several months, we were able to determine the relative efficiency of the various trucks. Older models were costing more for repairs and maintenance.

After a six-month check, we de-

cided to begin standardizing our delivery fleet. This will cut parts and service costs and raise driver efficiency, which improves when the men become more familiar with the trucks and do not have to switch continually from one make to another.

Some parts, such as oil filters, battery cables, tires, rims and spark plugs, are carried in stock and such stocks can be reduced when the parts are interchangeable on the same make of truck.

The cost system also has proven valuable in figuring coal distribution costs, such as miles traveled per stop, (TURN TO PAGE 82, PLEASE)



LEGISLATIVE LOOKOUT

**Colorado defeats anti-highway bills;
Florida overrides veto to boost private truck limit to 40,000 lb. gross**

PERHAPS more significant than any of the legislation passed and approved during the past month was that which was NOT passed or approved. Included in this category was a long list of measures defeated in the state of Colorado. These would have provided for itinerant merchant regulation (H. 298, S. 371); Sunday holiday truck ban (H. 553, H. 27, the latter applicable only to petroleum trucks); double-decker transport ban (H. 197); railroad operation of motor vehicles (H. 195); uniform size and weight standards of the Western Association of State Highway Officials (H. 289, S. 585); gasoline gallonage transport restriction (H. 28); gasoline grading law (H. 153) and H. 99 imposing taxes on the caravanning of automobiles.

In other states many similar bills

have been tried in the balance and found wanting.

Nonetheless many of the legislatures were still at work and found time for the passage of numerous bills during the month, the more important of which are briefed below.

These bills have been approved by the governors:

FLORIDA

S.7 re-enacts the seven cent gas tax.

House and Senate both voted to override former governor's veto of H.579, passed at the 1939 legislature, increasing gross weight for private trucks to 24,000 lb. and private tractor-trailer combinations to 40,000 lb.

IOWA

H.557 increases maximum axle

weight to 17,000 lb (with pneumatic tires) subject to gross load formula of 28,000 lb. plus 500 lb. for each foot between front and rear axles.

MAINE

H.1479 would impose 4c per gallon tax on fuel other than gasoline.

H.312 would reduce registration fee for trucks between two and three tons rated carrying capacity.

MARYLAND

H.103 requires dimming of headlights.

S.255 requires payment of taxes before issuance or transfer of license plates.

S.282 provides for construction of motorway from Baltimore to District of Columbia.

MINNESOTA

H.1448 provides excise tax on liquid fuel not otherwise taxed as gasoline.

NEW YORK

H.1592 regulates transportation of inflammable liquids.

OHIO

H.J.R.36 provides for a study to determine advisability of extending Pennsylvania Turnpike through Ohio.

WISCONSIN

General Order MVD-104 of the Wisconsin Motor Vehicle Department prohibits week end and holiday operation of motor carrier (common, contract, and private) vehicles of gross weight of more than 8000 lb. from May 29 to the second Sunday in September on twelve specified Wisconsin highways. Operations exempted include transportation exclusively of passengers, live-stock, fresh fish, fluid milk or cream, fresh vegetables, fresh fruits, ice cream, fresh bakery goods, ice, or newspapers.

The following new bills have been introduced but not passed:

FLORIDA

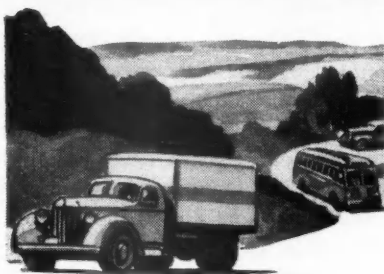
H.576 would limit transportation of petroleum products over highway to 1000 gallons.

ILLINOIS

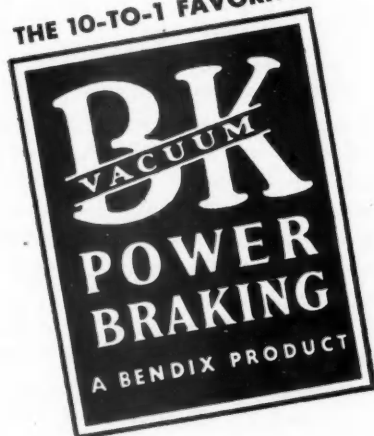
H.794 would permit length of 40 ft. for combination of truck and (TURN TO PAGE 151, PLEASE)

AMERICA NEEDS THE
UNFALTERING SERVICE
OF YOUR TRUCKS
AND YOUR BUSES, ON
THEIR DAILY JOBS

and everything we can do
to help you *will be done*



THE 10-TO-1 FAVORITE



YOUR service to America is vast and vital. Whatever your work in commercial transportation may be—whether it's building, selling, servicing or actually operating the nation's trucks and buses—America needs you on the job.

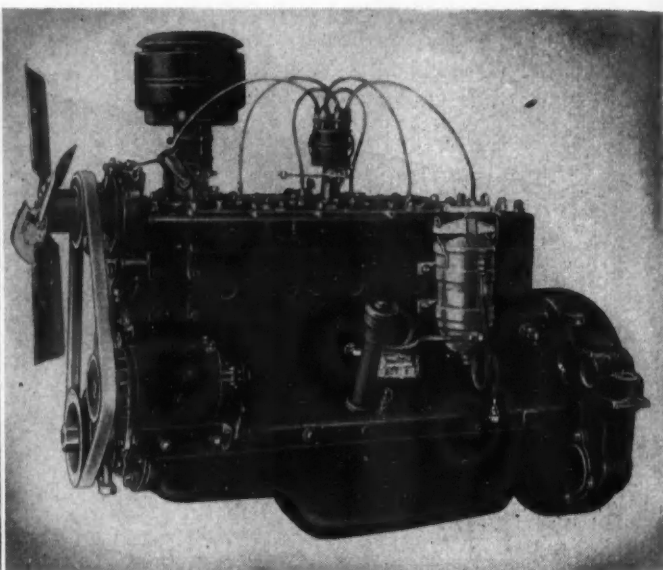
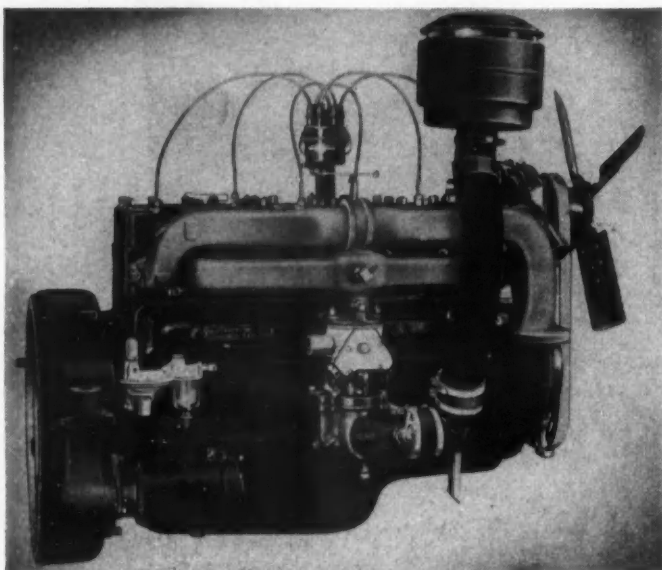
Food, clothing, merchandise of a thousand kinds, moves on your wheels. Men, women, children, by millions ride to work and shop and school on your cushions. In emergency you could whisk an army from border to border, with all its varied loads as well.

Your job and your equipment must not suffer from neglect . . . and to the absolute limit of our ability, to the full extent that Bendix Products may be necessary to you—we are at your service.

The problems you have to solve we have made our problems as well—our progress has been possible only by keeping pace with yours. This will always be true . . . and we will always be proud of it.

BENDIX PRODUCTS DIVISION

OF BENDIX AVIATION CORPORATION, SOUTH BEND, INDIANA
In Canada: BENDIX-ECLIPSE OF CANADA, LTD., WINDSOR, ONT.



Starboard and port sides of the new Continental B600 series engine. Note the unusual air intake for the updraft carburetor.

CONTINENTAL'S NEW ENGINES

A detailed description of the new B600 series, designed for heavy-duty truck use, now available in 371 cu. in. and 405 cu. in. sizes

THE B600 series is the latest series of engines brought out by Continental Motors Corp. They are six cylinder, "L" head and designed for heavy duty and continuous operation. At present the series consists of two engines, the B6371 which has a $4\frac{1}{8}$ in. bore and a $4\frac{5}{8}$ in. stroke, and the B6405 which has a $4\frac{5}{16}$ in. bore and a $4\frac{5}{8}$ in. stroke. As the model numbers indicate, the B6371 has a 371 cu. in. displacement and the B6405 has a displacement of 405 cu. in. With a compression ratio of 5.7, the B6371 develops 100 hp. at 2500 r.p.m. and the B6405 develops 111.5 hp. at 2400 r.p.m. As to torque, the

B6371 develops 280 lb. ft. at 1000 r.p.m., while the B6405 develops 306 lb. ft. at 900 r.p.m.

Inlet port diameter is $1\frac{3}{4}$ in. while the exhaust ports are $1\frac{1}{2}$ in. in diameter. The inlet valve is made of chrome nickel steel and has a 30 deg. seat. The exhaust valve is made of No. 2112 austenitic steel with a 45 deg. stellite seat.

Tappets are barrel type and lubricated under pressure direct from adjacent oil header. There are two springs on each valve, one located inside of the other and both are retained by a single retainer with a split tapered lock.

The crankshaft is seven bearing and is counterweighted. All main bearings are $2\frac{7}{8}$ in. diameter. Both the main bearing shells and the connecting rod bearing shells are of the thin wall, steel back type with white metal lining. The front end is gear driven, the gears being $1\frac{1}{16}$ in. wide and 10 pitch. The standard engine has only two gears but a three-gear front end can be supplied on special order. This three-gear front end has provisions for the mounting of a magneto and also a mechanical governor, the two accessories being mounted in line with each other and driven by the same gear.

The pistons are made of aluminum alloy and carry five rings each. Piston pins are of the floating type, being retained by snap rings in the piston.

Manifolding and porting are typically Continental, that is, the ports are all individual and the intake ports are served by individual runners in the intake manifold.

Deflectors or steps are used in the intake manifold to insure uniform distribution of fuel. The exhaust manifold is composed of two end sections joined by a slip ring to a short center section. This is to prevent breakage due to expansion and contraction in service.

The manifold gasket is also designed with this point in view. It is so made that it can come and go with the manifold itself and if it does (TURN TO PAGE 86, PLEASE)



"Trucks always ready for daily service during the 18 years I've used Exides"

— says Transportation Manager of
Canada Dry's New England Division



The first light-weight steel trailer used in New England. Mr. H. M. Cubberly, V. Pres. of Canada Dry in charge of New England, and Mr. Lindholm pioneered with this type of unit in New England. Naturally, it is Exide equipped.

MR. H. LINDHOLM, New England Transportation Manager of Canada Dry Ginger Ale, Inc., has charge of a fleet of 100 trucks and 50 salesmen's cars. Daily service to customers makes it essential that every one of these units be always ready to go. Exide Batteries are used exclusively, and Mr. Lindholm says that, in the 18 years he has been using Exides, his operating costs have been down to a minimum.

You can find no better testimony than that, either to the maintenance methods of a fleet operator, or to the battery he uses. There are many others, operating large fleets in every section of the country, who have consistently had the same experience with Exides. You can be sure that Exides will cut down your own battery cost per mile to the minimum.

This is especially true today, when haulage units of all kinds are being worked harder and faster. On top of that, the Exide Batteries you get today are averaging 25% longer service life than even Exides have ever delivered before. These batteries are also available with wood and fibreglas separators for "cycling" service. Why not see your Exide Distributor today?

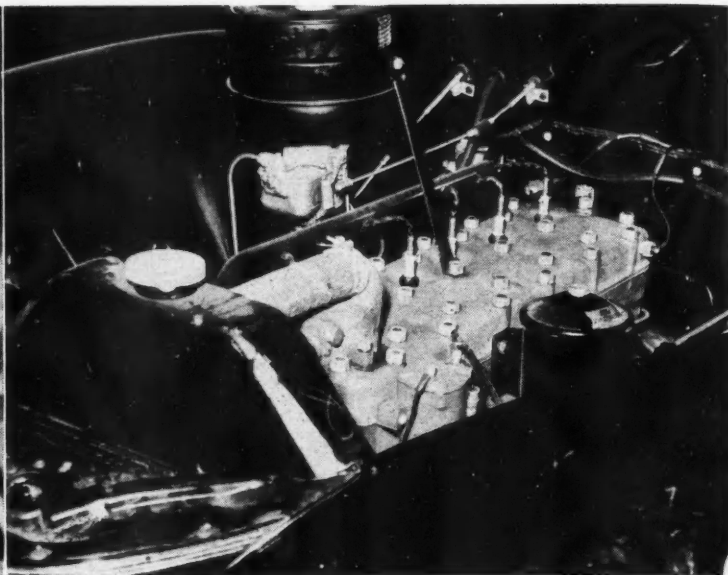
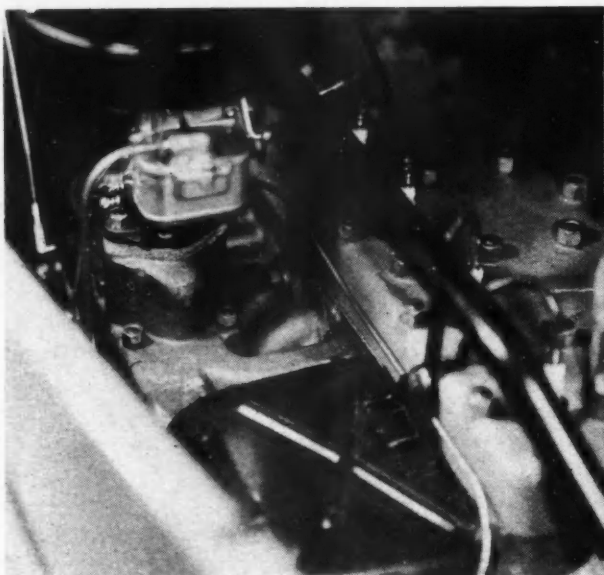
THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto



A few of the 150 units in the fleet of the New England Division of Canada Dry Ginger Ale, Inc. All are Exide equipped.



Exide
**HEAVY-DUTY
TRUCK BATTERIES**



Photos show the Ford "6" engine installed in a standard 1½-ton truck. Note arrangement of accessories including oil filter, and the single-throat down-draft carburetor. Cowl-mounted battery (below) remains at close range

NEW FORD SIX ENGINE

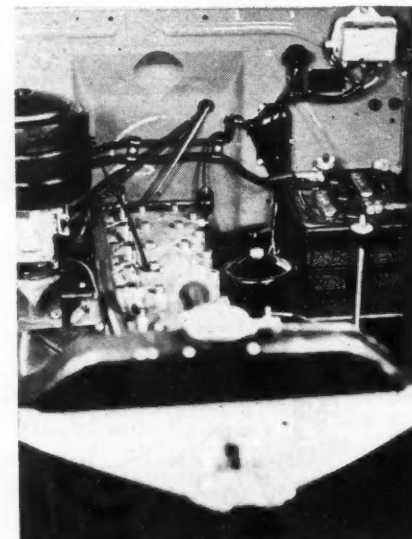
**226-cu. in., L-head powerplant
is rated 90 hp. at 3400 r.p.m.;
is much more accessible and is
priced \$15 below 85 hp. V-8**

FORD MOTOR CO. is now making some deliveries of trucks powered with six-cylinder engines. The engine is interchangeable with the V8 powerplant and is used with no other change in the vehicle. So far its use appears to have been confined to commercial cars and trucks.

The engine has a bore of 3.3 in. and a stroke of 4.4 in. giving 225.7

cu. in. of piston displacement and a rating of 90 hp. at 3400 r.p.m. The torque is 180 lb. ft. at 1400 r.p.m. Compression ratio is 6.7. Valves in "L" arrangement are seated in hardened inserts.

Four main bearings support the crankshaft and the pistons are equipped with two compression rings and one oil ring. The distributor



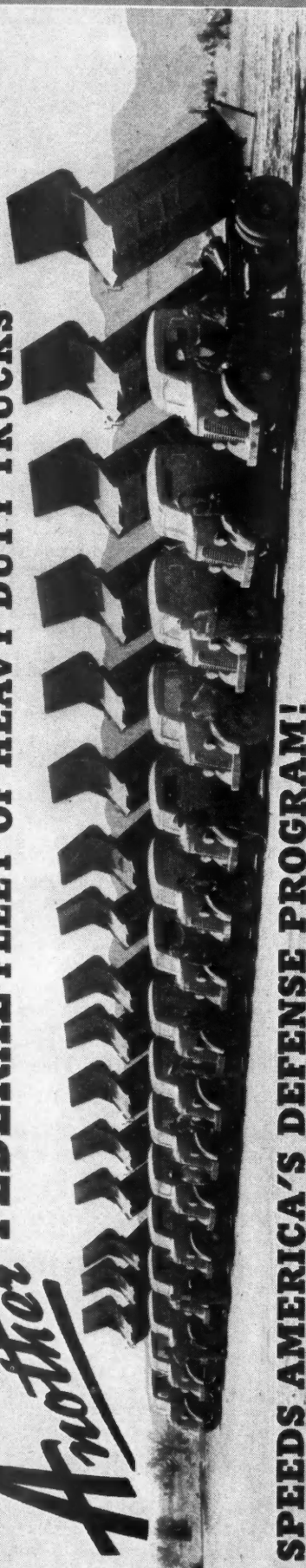
driven by the camshaft is located on the front of the engine at the right hand side. It is much more accessible than the unit on the V8. The coil is located on the left hand side of the engine near the top. Behind it is an oil filter.

The fuel pump, manifolds and carburetor are on the right side of the engine. The fuel pump is about midway from top to bottom towards the front of the engine. The carburetor is a single throat downdraft unit equipped with an air cleaner. The cylinder head is made of cast iron.

Vehicles equipped with the six-cylinder engine are priced \$15 lower than those with the V8.

Another

FEDERAL FLEET OF HEAVY DUTY TRUCKS



SPEEDS AMERICA'S DEFENSE PROGRAM!

Pushing a new 90-mile highway across the Arizona Desert from Fort Huachuca to Nogales . . . These "Built to take it" Federals Work 22 1/2 Hours a day! . . .

Modern emergency construction work, both national and industrial, imposes a three-fold obligation on men and machines—efficiency, dependability and speed. Federal's finer quality trucks fit into this emergency picture with increasing importance—because those three factors are basic characteristics of "job-tailored" performance.

Proof? Yes, plenty! Note what Superintendent W. E. Henderson, who is directing the building of the Fort Huachuca-Nogales Highway, says about Federal reliability. This authoritative statement is made by an experienced operator who supervised the laying of Arizona's first oil cake road over twenty years ago.

FEDERAL BUILDS A COMPLETE LINE FROM LIGHT TO HEAVIEST TONNAGE CAPACITIES . . .

Quality Trucks at Production Prices

"These Federal trucks constitute the snappiest, handiest and huskiest fleet it has ever been my pleasure to supervise."

W. E. HENDERSON, Supt.

One of the sixteen Federals being loaded with road base material from pit established in the Arizona Desert



One of the tough jobs to Federal, cut your ton-mile costs, experience the type of performance that means all-truck construction. Federal builds a complete line of trucks from light to heaviest tonnage capacities . . . builds into each one the bed-rock strength and toughness that give you a payoff in superior performance. Check up on Federal Trucks today . . . verify their lower prices, lower maintenance costs, greater efficiency, absolute economy.

FEDERAL MOTOR TRUCK CO., DETROIT, MICH.

FEDERAL TRUCKS

For 31 Years—Known in Every Country . . . Sold on Every Continent

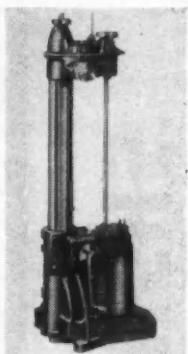
"TON FOR TON IN '41—FEDERAL LEADS THE WAY!"

UNIVERSITY OF WILMINGTON LIBRARY

SHOWCASE OF NEW PRODUCTS



Per-Fect-O Boring Bar



Van Norman's No. 965 Per-Fect-O Boring Bar takes complete range of cylinders from 2.600 in. to 5.250 in. diameter, and up to 14 in. deep. Yet the machine weighs only 115 lb.

Like other Per-Fect-O Bars, it has the four Van Norman catspaws which are used not only for centering the bar, but also as steady rests for the single tungsten carbide cutting tool as it goes down the cylinder wall. No weaving, vibration, taper or misalignment, according to the makers. Van Norman Machine Tool Co., Springfield, Mass.

Safety Glass in Hydrometer

Shatterproof glass, which will withstand hard knocks without breaking and will not shatter, has made its appearance in a new

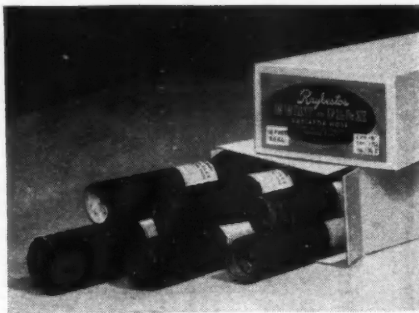


hydrometer line just announced by The Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago. It was developed jointly by the Imperial organization and the Kimble Glass Co.

Leader of the new line is the "Armor-Klad" No. 515-T, a thermometer-type hydrometer with a shatterproof glass jar. Service instructions are printed on the barrel. There is also a general purpose tester and a small size tester for use in close quarters. Prices range from 75c to \$1.20.

New Hose Simplifies Stocking

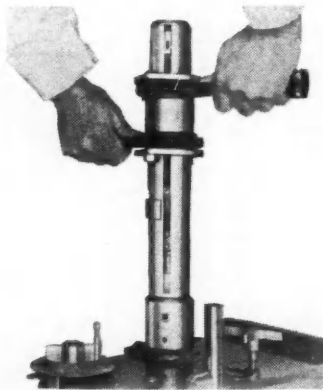
Ninety per cent of curved radiator hose applications for passenger cars and trucks is said to be possible with only five sizes, due to the introduction of Curv-Flex radiator hose, manufactured by the Raybestos Division, Raybestos-Manhattan, Inc., Bridgeport, Conn. Supplied in 3-ft.



lengths, it is said to combine strength and flexibility with special wire back construction, thus eliminating the need of coiled wire inserts. Two colored sleeves on each length show the size and car for which it is intended.

Sunnen Rod Grinding Fixture

A new fixture for grinding Ford rod bushings is available from the Sunnen Products Co., 7917 Manchester Ave., St. Louis, Mo. The unit, made to operate in the Sunnen bushing grinder, is designed so the rods can be clamped together and ground in pairs. It features a special mandrel which uses two stones and two non-cutting guides. It is claimed that a

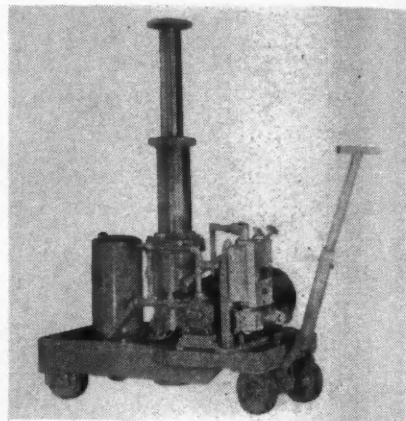


complete set of rods can be ground and finished to .010 in. oversize in 30 to 40 minutes.

Globe Portable Lift

An electro-hydraulic portable lift, designed to facilitate the removal and handling of transmission, axles and other units has been announced by the Globe Hoist Co., 1000 East Mermaid Lane, Philadelphia, Pa. The new unit, measuring 48

in. in length and 30 in. in width, has a lifting range from 34 to 70 in. and a capacity of 4000 lb. A flanged, recessed



socket on top of the plunger assembly is fashioned to support removable brackets, tables or other equipment shaped to fit the various pieces of apparatus to be handled. Oil pressure for hydraulic operation is provided by a geared rotary oil pump powered by a 1½-hp., AC, 220-volt motor direct-connected to the pump. The lift rolls easily on anti-friction bearing wheels and can be used to transport its loads to the shop.

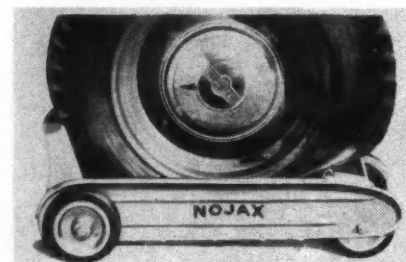
Do-Ray Three-Purpose Lamp



The Do-Ray Lamp Co., 1458 S. Michigan Ave., Chicago, has a new all-rubber three-jewel lamp which may be used as a clearance, marker or parking light. The lenses are interchangeable so that the lamp may be mounted on either side. In addition to the cadmium-plated angle bracket shown, there is also a complete metal guard available, or the lamp may be mounted direct to a fender.

Emergency Flat Tire Truck

A little truck, which performs the function of a wheel when a tire goes flat, has been announced by the Cello Products Co., East Boston, Mass. After positioning the device and lowering the tail ramp, the driver moves the car forward until the "disabled" wheel is resting in the cradle



where it is held by the weight of the car and the automatic locking action of the tail ramp. Known as "Nojax," the new device is designed to carry up to 5000 lb.

(MORE NEW PRODUCTS ON
PAGE 110)



CONFIDENTIAL INTERVIEW WITH THE
ALL AROUND CHAMP OF THE SPEEDY
FLEETS—THAT NATIONAL FAVORITE
—THE FAMOUS

U. S. ROYAL FLEETWAY

REPORTER: What would you say are the main reasons for your popularity, champ?

FLEETWAY: Well, I got an extra-tough body construction. That means I can stand up longer under punishment. And I keep cool goin' at high speeds under heavy loads—especially with Rayon cords in my 11.00 and up sizes.

REPORTER: I see—and I understand you've got a flat, deep tread that puts more rubber in your road work.

FLEETWAY: Sure, and it's made of longer-wearing U. S. Tempered Rubber. That means extra-long, safe mileage with more tough, non-skid tread on the road.

REPORTER: What about those new buttresses?

FLEETWAY: Oh—them. Well, I got newly designed ventilated buttresses that get rid of heat while they give me extra support in my sidewalls.

REPORTER: How come you absorb shocks so well and keep cool at the same time?

FLEETWAY: That's easy. I got shock pad construction—in 10 plies and up—increases flexibility—runs cooler.

REPORTER: Well, champ, you sure have got plenty of stuff. Anything special you want to say to your public?

FLEETWAY: Sure, just tell 'em I'm the best truck tire in the business for all around service. Tell 'em I've proved that I give low-cost-per-mile performance in all types of high-speed, heavy-load, long-distance runs!



ASK YOUR U. S. DEALER HOW FLEETWAY CAN CUT YOUR TIRE-MILE COSTS!

UNITED STATES RUBBER COMPANY

1230 Sixth Avenue • Rockefeller Center, New York

NEWSCAST



McCormick Heads Harvester Co.



Fowler McCormick

post now occupied by Mr. McAllister. Maurice F. Holahan continues as first vice-president while two new vice-presidents, Arnold B. Keller and Karl O. Schreiber, were elected.

Higher Gas Tax—Less Returns

Higher Federal gasoline taxes will produce less Federal income from that source in the opinion of John V. Lawrence of American Trucking Associations, Inc., who testified to that effect before the House Ways and Means Committee last month. Further increases in the fuel tax, according to Mr. Lawrence would place a severe discrimination upon motor transportation and the additional levy would only tend to curtail the use of trucks.

Delivery Men Favor 4-Cyl. Engine

Sixty-three per cent of route delivery truck owners in various parts of the country would prefer four-cylinder engines in their new vehicles, according to a survey just conducted by Transportation Engineers, 14307 Third Ave., Detroit. Economy was

the principal reason expressed, but we understand the company will be glad to furnish any fleetman with complete details.

Express Agency Gets Temporary Authority for 18 Motor Routes

The latest news on the much-in-the-news Railway Express Agency status is the fact that the ICC's Motor Carrier Division has granted the Agency temporary authority to operate trucks over 18 routes in 12 states. The service was restricted, however, to shipments subject to "an immediate prior or immediate subsequent rail movement by the Agency."

Earlier in the month the Division had turned down the Agency's applications for temporary permission to operate over 28 additional routes on the general grounds that adequate motor carrier service was now being provided over these routes, whereas such was not the case on the routes where authority was granted. Applications for 19 additional routes were still pending at this writing.

TRUCK PRODUCTION (U. S. and Canada)

	1941	1940	Per Cent Change
January.....	100,878	74,016	+35.0
February.....	104,103	71,690	+45.5
March.....	111,561	75,285	+48.1
3 Months.....	316,542	220,991	+43.2
April.....		78,807	
May.....		74,139	
June.....		67,787	
July.....		74,005	
August.....		41,533	
September.....		56,703	
October.....		86,104	
November.....		93,068	
December.....		98,747	
Total.....		889,884	



John V. Lawrence (left) receives the annual trade association "oscar" in behalf of ATA from Wayne C. Taylor, Undersecretary of Commerce

ATA Wins Ninth Annual Trade Association Award

In recognition of its work in combating discriminatory legislation and in carrying on a national advertising campaign, the American Trucking Associations, Inc., finds itself this year's recipient of the annual "oscar" awarded by the American Trade Association Executives for outstanding achievement in the trade association field.

The award was made at a session of the annual convention of the U. S. Chamber of Commerce. In presenting the bronze trophy Wayne Chatfield Taylor, Undersecretary of Commerce, had this to say:

"ATA carries on a wide program of helpful activities, but its special achievement this year was in the field of combating discriminatory legislation, and the carrying on of a national advertising and public relations campaign which was tied up with the recently awakened public interest in interstate trade barriers.

"This campaign resulted in marked improvement in the morale of the industry, both as to owners of trucks and the drivers themselves. This association assisted in increasing public understanding regarding the harmful effects of some types of interstate trade barriers.

"Another feature of its work was the carrying on of a series of safe-driving programs, and the holding of many contests to aim to increase the efficiency of drivers and to call to the attention of the public the various advantages of this form of transportation."

(TURN TO PAGE 48, PLEASE)

New Truck Registrations by Makes by Months*

	Auto-car	Brockway	Chevrolet	Diamond T	Dodge	Federal	Ford	G.M.C.	Hudson	Inter-nat'l	Knack	Plymouth	Reo	Sterling	Studebaker	White	Willys	Misc.	Total
January..... 1941	189	155	20,144	447	4,499	125	16,175	9,163	61	7,572	674	861	81	34	231	906	87	300	61,712
January..... 1940	143	117	15,997	536	4,345	152	13,282	3,142	56	5,532	572	711	11	22	81	422	171	336	45,650
February..... 1941	139	128	18,100	438	4,152	131	16,830	5,513	62	7,305	532	747	90	35	231	1,092	82	287	55,900
February..... 1940	94	92	13,789	425	4,336	112	11,960	2,632	60	4,981	425	767	4	31	101	371	131	360	40,729
March..... 1941	215	175	19,233	570	4,966	103	16,940	3,609	82	8,018	770	988	137	33	356	757	151	374	57,483
March..... 1940	136	123	16,560	568	5,058	150	13,909	3,132	72	6,323	514	930	1	24	142	520	211	315	48,593
3 Months..... 1941	543	458	57,477	1,455	13,617	364	49,945	18,285	210	22,896	1,976	2,601	308	102	816	2,756	321	961	175,095
3 Months..... 1940	373	332	46,702	1,529	13,744	416	39,183	8,998	186	16,870	1,511	2,415	21	77	328	1,313	566	1,013	135,579
% Change.. Three Mos.	+45	+38	+23	-5	-1	-13	+28	+103	+12	+36	+31	+8	+1468	+32	+149	+110	-43	-5	+29

* Includes all Federal Deliveries. † Does not include totals for Georgia and Tennessee.

LUBRI-ZOL KEEPS THEM ROLLING

Sixteen diesel-powered dump trucks in Flushing fleet maintain continuous, uninterrupted service with capacity loads in congested Long Island areas.

Cleaner engines! Smoother power! Fewer repair bills! All-round better performance!

For diesels, Lubri-Zol offers "Lubri-D-Zel" Lubricating Oil, with either paraffinic or naphthenic base, and Lubri-Zol Diesel Fuel Concentrate ("DFC").

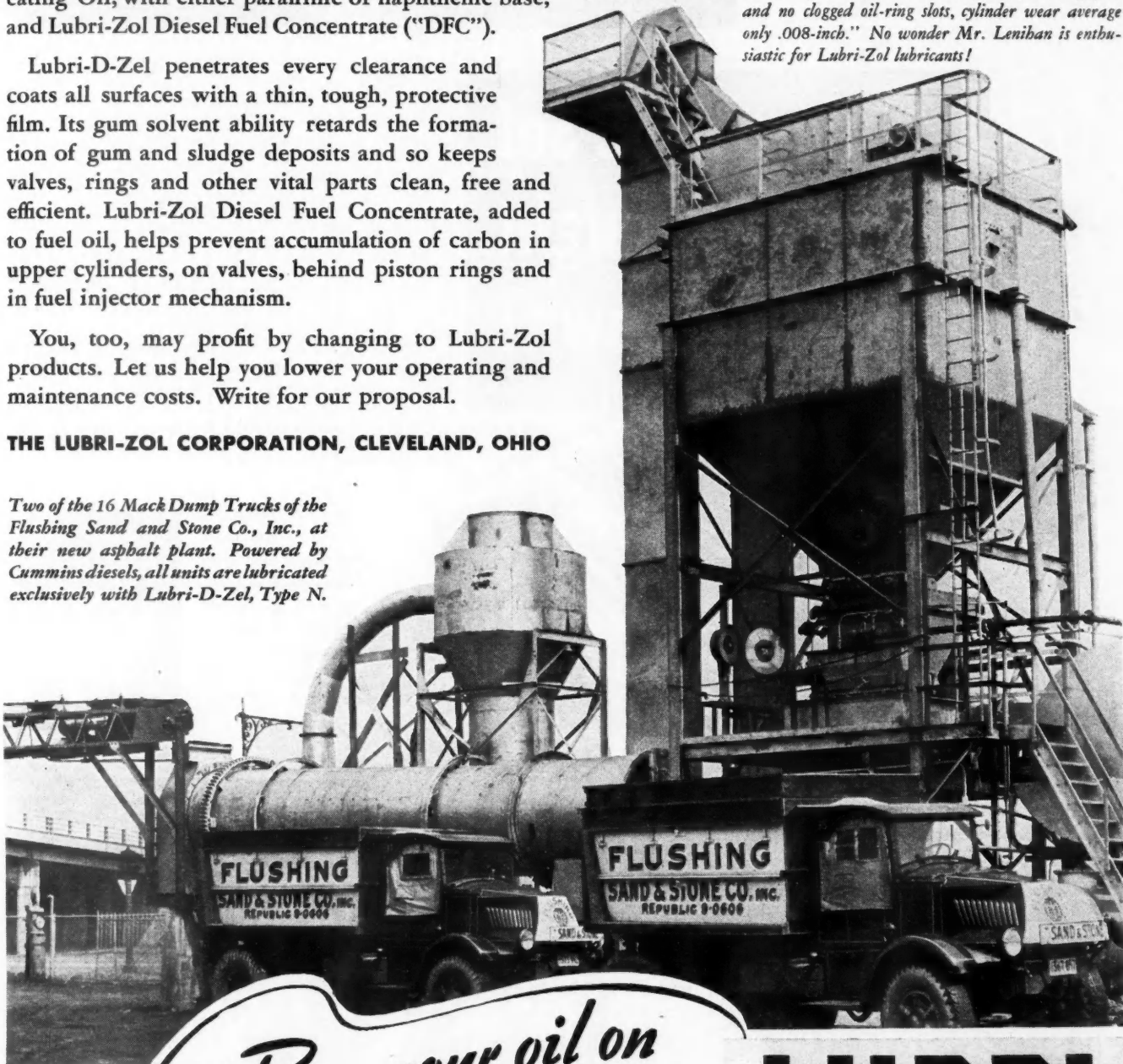
Lubri-D-Zel penetrates every clearance and coats all surfaces with a thin, tough, protective film. Its gum solvent ability retards the formation of gum and sludge deposits and so keeps valves, rings and other vital parts clean, free and efficient. Lubri-Zol Diesel Fuel Concentrate, added to fuel oil, helps prevent accumulation of carbon in upper cylinders, on valves, behind piston rings and in fuel injector mechanism.

You, too, may profit by changing to Lubri-Zol products. Let us help you lower your operating and maintenance costs. Write for our proposal.

THE LUBRI-ZOL CORPORATION, CLEVELAND, OHIO

Two of the 16 Mack Dump Trucks of the Flushing Sand and Stone Co., Inc., at their new asphalt plant. Powered by Cummins diesels, all units are lubricated exclusively with Lubri-D-Zel, Type N.

"Lubri-Zol keeps our Cummins diesels beautifully clean, corrosion-free and like new," says J. A. Lenihan, Secretary, Flushing Sand and Stone Co., Inc. Dismantled for inspection for the first time since installation two and a half years ago, the engines checked as follows: "No sludge in crankcase, no corrosion or wear on bearing inserts, no varnish on pistons, all rings free and no clogged oil-ring slots, cylinder wear average only .008-inch." No wonder Mr. Lenihan is enthusiastic for Lubri-Zol lubricants!



*Buy your oil on
the cost per mile...
and save... with*

LUBRI
REG. U.S. PAT. OFF.
ZOL

LUBRI-ZOL LAB

The new Lubri-zol Corp. laboratory at Cleveland, Ohio, is devoted entirely to lubricants and additives. Glass brick and sound absorbing materials make it a mechanic's dream shop. The bank of 15 single cylinder engines on the left does the preliminary sorting of materials and surviving combinations get more thorough test in full size engines at right. At extreme rear two chassis dynamometers are still to be installed. This mechanical laboratory is a companion to the adjacent chemical laboratory of about the same size.



NEWSCAST

(CONTINUED FROM PAGE 46)

Getting Personal

The Dodge truck sales organization has been expanded by the appointment of six new District Truck Managers. They are: G. P. Hanlin, Columbus, S. C.; C. S. Currier, Lynchburg, Va.; T. F. Kilcommons, South Orange, N. J.; W. K. West, Oklahoma City; Leo C. Sherry, Los Angeles, and W. L. Baier, Kansas City.

Other Dodge appointments include the naming of the following general district managers: G. Milliken, Peoria, Ill.; B. P. Higby, south zone of Chicago; C. M. Ball, Great Bend; C. H. Cramer, Topeka; Neil Vogel, Nevada, and H. H. Walker, North Platte.

Geo. A. Martin, board chairman of the Sherwin-Williams Co., and recent recipient of the Cleveland Chamber of Commerce's annual award for Public Service



Reo Motors, Inc., has announced the appointments of Owen Knapp (left) and E. H. Sullivan as manager and assistant manager, respectively, of the company's Chicago branch

Nine additions to Studebaker's national sales force were announced recently. New Studebaker truck representatives are: J. H. Rastatter, Cleveland; A. J. White, Omaha, and A. C. Harrover, Detroit. New special representatives working on assignments (TURN TO PAGE 66, PLEASE)

Here's the Set YOU ought to own!



NOW'S the time you need good tools! . . . Car owners everywhere are bringing in the "old bus" to give it that long delayed overhaul, and they're going to the shop where they know they can get the best work done in the fastest time.

That's why you need good tools now! And that's the reason you should own this set . . . it equips you with a complete selection of wrenches and hand tools to get those repair jobs out in a hurry . . . lets you work easier with the right tool for every job . . . Rid your kit of worn out, obsolete tools . . . get this set complete or buy it a few tools at a time . . . equip yourself today for better, easier work tomorrow. See the Snap-on man or write . . .



SNAP-ON TOOLS CORPORATION
Dept. CCJ-6 • Kenosha, Wisconsin

Snap-on

SERVICE TOOLS

The Choice of Better Mechanics

KEY TO DEFINITIONS, ABBREVIATIONS AND REFERENCES

DEFINITIONS

MAKE AND MODEL
Only Domestic Truck Models are listed.

OPTIONAL UNITS
For the express purpose of best fitting the truck to the individual job most of the models listed are provided with optional units, such as transmissions, axles, etc., and these models when so equipped are considered standard stock models.

CHASSIS LIST PRICE
The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are in dollars and cents. The price does not include the price of the Cab unless otherwise noted.

RECOMMENDED GROSS VEHICLE SERVICE FOR NORMAL SERVICE

The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual use, the Gross Vehicle Weight may increase or decrease the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, such as load distribution, conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety should be observed. Specified conditions, therefore, should be obtained from the manufacturer's representative.

CHASSIS WEIGHT

The chassis weight listed includes the weight of the chassis with standard tires, with standard equipment full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This weight is included in the Gross Vehicle Weight at chassis types. Exceptions are noted.

STANDARD TIRE SIZE

The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED TIRE SIZE

The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight. It is furnished at extra cost if it differs from the standard size. Dual rear axles are understood; exceptions noted.

MINIMUM STANDARD WHEELBASE

The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

MAXIMUM STANDARD WHEELBASE

The maximum standard wheelbase is the longest wheelbase offered by the chassis maker.

MAXIMUM BRAKE HP

Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

GEAR RATIO RANGE

Gear Ratio Range in High—Ratios within the range given are available at no extra cost. Exceptions are noted.

TRACTORS

Unless given the designation (N)—Non-tractor, all models are assumed to be available as tractors. Exclusively Tractor models are designated (T).

KEY TO REFERENCES

c.f.—Cab Forward design.
c.o.e.—Cab-Over-Engine design.
(C)—Converted Ford or Chevrolet model.
el.—Identifiable by engine make listed.
(d)—For dump or tractor service only.
(D)—Diesel-engine equipped.
e.b.s.—Engine-between-seat design.
e.u.s.—Engine-under-seat design.
(N)—Not available as a tractor.
(T)—Designed for tractor use only.
(3) Available—All models available in c.o.e. design, oversize power plants, oil engines and six-wheel construction.
(5) Condon—These models available with double drop bus frames.
(6) Federal—245 cu. in. engine and 11" clutch available on Models 16, 17, 76 and 77.
263 cu. in. engine and 11" clutch available on Models 16, 17, 76 and 77.
428 cu. in. engine available on Models 45, 51, 52 and 94.
501 cu. in. and 55 cu. in. engines available on Models 25, 29, 35, 45, 76, 77, 80, 85 and 89.
Double reduction rear axles available on Models 20, 25, 29, 35, 45, 80, 85, 89, 90 and 94.
Gearboxes available on Models 25, 29, 35, 45, 55, 85, 89, 90, 92 and 94.
All above at extra cost.
(7a) Federal—Model 62 when furnished with 150hp, 1100/24 tires and Continental 21RF engine is known as Model 62X, and has a dry chassis weight of 10,975 lbs.
(9) Gram—Models 31, 41, 46, 56, 71, 76, 85 and 96 both gasoline and diesel available with drop bus frames at chassis wheelbase 221.
263 cu. in. engine available on Model 31 and 41.
282 cu. in. engine and 5 speed transmission available on Models 41, 46, and 56.
320 cu. in. engine and 5 speed transmission available on Models 71, 80, 85 and 89.
404 cu. in. engine and larger 5 speed transmission available on Model 58.
Overize two speed and double reduction axles available on Models 21, 41, 46, 56, 71, 80, 85 and 89.
All other equipment furnished at extra cost.
(10) Corbitt—Wheelbases optional—any wheelbase desired furnished at chassis price listed.
(11) International Harvester—By "Normal operating conditions" (see definition) Gross Vehicle Weight for operation on level terrain over roads with a tractive resistance value of from 25 to 30 pounds per ton of gross vehicle weight and at controlled and uniform speeds within a range of not to exceed 45 m.p.h.
(14) Reo—Also available with four speed transmission and bevel gear rear axle.
(15) Sterling—Available with double reduction rear axle.
(16) Sterling—Diesel powered unit of comparable capacity available in addition to gasoline models.
(18) Willys—Advertised list price less Federal tax. Cab Pick-up \$875; Panel Delivery \$890. Prices complete with bumpers. Standard tires 5.50/16—4 ply; Panel Delivery 6.00/16—4 ply; 6.00/16S—6 ply—optional.

KEY TO ABBREVIATIONS

MAKES—ALL
B—Bendix.
BL—Brown-Lope.
Bu—Bud-Buda.
Cat—Caterpillar.
Cl or Cla—Clark.
Co—Coyne.
Con—Continental.
Col—Columbia.
Cum—Cummins-Diesel.
Det—Detroit Gear.
F—Ford.
Her—Hercules.
L—Lockheed.
LW—Lockheed front, Own rear.
LW—Lockheed front, Wisconsin rear.
LW—Lockheed front, Wisconsin rear.
N.P.—New Process.
Op or Opt—Optional.
Sal—Salsbury.
Shu—Shuler.
T or Tim—Timken.
TW—Timken front, Own rear.
TW—Timken-Wisconsin.
WH—Wagner in Harrington.
WH—Wagner in Harrington.
W-H—Waukesha-Hesselman.
Wau—Waukesha.
W or Wis—Wisconsin.
W—Wagner front, Own rear.
W—Wagner front, Own rear.
W—Westinghouse.

FRAME TYPE

C—Channel.
L—Channel tapered front and rear.
L—Channel reinforced with both liner and fishplate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center.
T—Tapered front.
X—X-Braced.
Y—Deep section channel frame with oak with oak inserts.
A—Straight section channel sidemembers, lined with full length channel reinforcements, and oak inserts.

GOVERNOR STANDARD

Y—Yes.
N—No.

REAR AXLE

Final Drive and Type

B—Bevel.
C—Chalk.
D—Dead.
F—Full-floating.
H—Hypoid.
d—Dual range axle.
S—Double Reduction.
W—Worm.
3/4—Semi-floating.
3/4—Three-quarter floating.

Gear Ratios

(*) Ratios other than standard at extra cost.
(**) Only one ratio.

Drive and Torque

A—Radius Rods and Torque Arm.
H—Hotchkiss (springs).
T—Torque Arm.
U—Torque Tube.

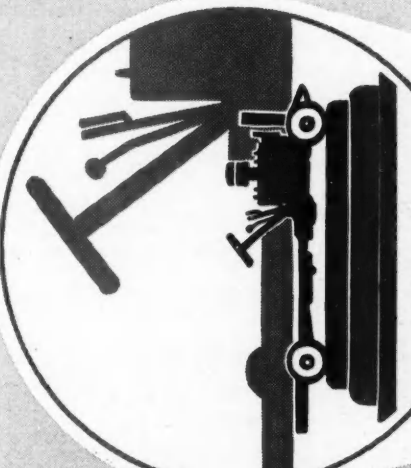
WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.
2R—Rear unit of Rear Axle Group.
4R—Forward and rear units of Rear Axle Group.
4F—Front Axle Group.
4FR—Front Axle and Rear unit of Rear Axle Group.
6—All wheels.

BRAKE DRUMS

Material

A—Cast alloy iron.
A—American Car Foundry.



TRUCK

SPECIFICATIONS

TABLE

OF

STANDARD

DOMESTIC

MODELS

TABULATED BY

COMMERCIAL CAR JOURNAL

and brought up to date in this issue from data supplied by manufacturers

Line Number	MAKE AND MODEL	WHEEL-BASE		TIRE SIZES		ENGINE DETAILS				TRANSMISSION		REAR AXLE		FRONT AXLE	BRAKES				FRAME					
		Minimum	Maximum	Standard	Front and Rear	Chassis Weight (See definition)	Displacement	Comp. Ratio	Torque lb. ft.	Max. H.P. at R.P.M.	Number of Main Bearings	Governor Standard	Make and Model	Gear End Type	Drive & Torque	Range in High	Make and Model	Location	Limiting Area	Drum Area	Hand Location	CA Dimension (Min. Std. W. B.)	Side Rail Dimensions	Type
1	Avall (3)	1370	1600	1600	7.50/20	4200	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	266	395	TX	60	10-3x3	L
2	Adel	1320	1600	1600	7.50/20	4200	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	304	395	TX	60	10-3x3	L
3	C-200	1320	1600	1600	7.50/20	4200	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	304	395	TX	60	10-3x3	L
4	C-250	1320	1600	1600	7.50/20	4200	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	304	395	TX	60	10-3x3	L
5	C-300	1320	1600	1600	7.50/20	4200	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	304	395	TX	60	10-3x3	L
6	C-350	1320	1600	1600	7.50/20	4200	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	304	395	TX	60	10-3x3	L
7	C-400	1320	1600	1600	7.50/20	4200	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	304	395	TX	60	10-3x3	L
8	C-450	1320	1600	1600	7.50/20	4200	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	304	395	TX	60	10-3x3	L
9	C-500	1320	1600	1600	7.50/20	4200	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	304	395	TX	60	10-3x3	L
10	C-550	1320	1600	1600	7.50/20	4200	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	304	395	TX	60	10-3x3	L
11	C-600	1320	1600	1600	7.50/20	4200	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	304	395	TX	60	10-3x3	L
12	C-650	1320	1600	1600	7.50/20	4200	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	304	395	TX	60	10-3x3	L
13	Bantam	349	75	1700	850 4.00/155	5.00/15	4.2x3.3	50	7.4	22-3800	3-2 1/4x1.005	WG T48E	3 5/8 10	8	H	6.8-10.25	3 5/8 10	O4IM	76	104 P	4I	114	8x2 1/2 x 109	L
14	Brookway	895	138	164	32x6	3865	210	6.2	154	71-3100	4-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
15	16	1395	138	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
16	17	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
17	18	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
18	19	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
19	20	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
20	21	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
21	22	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
22	23	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
23	24	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
24	25	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
25	26	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
26	27	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
27	28	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
28	29	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
29	30	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
30	31	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
31	32	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
32	33	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
33	34	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
34	35	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
35	36	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
36	37	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
37	38	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
38	39	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
39	40	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
40	41	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
41	42	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
42	43	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
43	44	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
44	45	1290	150	176	7.50/20	4100	245.5	5.7	165	73-3000	7-3/4x10	WG T9	4 Tm 5521H	3.5	H	6.8-10.25	4 Tm 5521H	LAIHV	255	402 A	TX	65	8x3 1/2 x 109	L
45	Chevrolet	478	115	155	600/168	3810	216	6.5	174	90-3300	4-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	158	242 A	2I	38 1/2	12-3/4 x 109	L
46	47	1058	115	155	600/168	3810	216	6.5	174	90-3300	4-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	158	242 A	2I	38 1/2	12-3/4 x 109	L
47	48	1058	115	155	600/168	3810	216	6.5	174	90-3300	4-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	158	242 A	2I	38 1/2	12-3/4 x 109	L
48	49	1058	115	155	600/168	3810	216	6.5	174	90-3300	4-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	158	242 A	2I	38 1/2	12-3/4 x 109	L
49	50	1058	115	155	600/168	3810	216	6.5	174	90-3300	4-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.8-10.25	4 Tm 5514H	LAIHV	158	242 A	2I	38 1/2	12-3/4 x 109	L
50	51	1058	115	155	600/168	3810	216	6.5	174	90-3300	4-3/4x10	WG T9	4 Tm 5514H	3.5	H	6.								

* Rear 7.00/16.
† Rear 7.00/17.
‡ Rear 32x8 single.
§ Federal-Chassis weight shown is for average chassis without cab and complete with average size tires, tools, spare rim, fuel, oil and water.
|| Federal-Chassis weight shown is for average chassis & cowl.
xx Ford—Price of chassis & cowl.
** Ford—Suggested retail price, distribution and delivery charges and all taxes extra.
† Denotes new models or change in specifications.
▲ International—6-cyl. Diesel engine Model AA-600 also available in these chassis.

† Rear 32x6 single.
‡ Rear 7.00/17.
§ Rear 32x6 single.
|| 11.25/24 single front.
¶ 10.50/24 single front.
* Federal—Chassis weight shown is for average chassis & cowl.
x Ford—Price of chassis & cowl.

† Rear 32x6 single.
‡ Rear 7.00/17.
§ Rear 32x6 single.
|| 11.25/24 single front.
¶ 10.50/24 single front.
* Federal—Chassis weight shown is for average chassis & cowl.
x Ford—Price of chassis & cowl.

† Rear 32x6 single.
‡ Rear 7.00/17.
§ Rear 32x6 single.
|| 11.25/24 single front.
¶ 10.50/24 single front.
* Federal—Chassis weight shown is for average chassis & cowl.
x Ford—Price of chassis & cowl.

† Rear 32x6 single.
‡ Rear 7.00/17.
§ Rear 32x6 single.
|| 11.25/24 single front.
¶ 10.50/24 single front.
* Federal—Chassis weight shown is for average chassis & cowl.
x Ford—Price of chassis & cowl.

79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE		TIRE SIZES Standard (See definition) Dual rear (Double rear) Single rear	ENGINE DETAILS					TRANS-MISSION		REAR AXLE		FRONT AXLE	BRAKES			C-A Dimension (Min. Std. W. B.)	FRAME Side Rail Dimensions	Type					
			Minimum	Maximum		Gross Vehicle Weight For Normal Service	No. of Cylinders, Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M.	Main Bearings Number and Diameter	Governor Standard	Make and Model		Forward Sp'ds	Make and Model	Clear and Type				Drive & Torque	Gear Ratio	Make and Model	Make Location	Service Lining Area	Drum Area	Hand Location Type
1	Wardford (C) DC-2	2875	163	200	26500	6200	32x6D	8.25/20	Ford V-8	6-3-4x4	221	6.1	150	85-3500	3-2, 5x4, 7	N Ford Own	8	SF	A 6.67	501	712	A	FX	89	7 1/2 x 3 1/2	C
2	Wardford (C) WC-2	2875	163	204	26500	6100	32x6D	8.25/20	Chev V-8	6-3-4x4	217	6.1	174	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
3	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
4	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
5	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
6	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
7	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
8	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
9	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
10	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
11	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
12	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
13	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
14	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
15	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
16	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
17	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
18	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
19	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
20	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
21	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
22	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
23	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
24	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
25	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
26	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
27	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
28	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
29	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
30	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
31	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
32	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
33	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
34	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
35	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
36	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
37	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
38	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
39	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
40	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
41	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
42	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
43	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
44	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
45	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
46	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A	41	86 3/4	7 1/2 x 3 1/2	C
47	Wardford (C) WC-1	2875	163	204	26500	6400	7.50/20	8.25/20	Chev V-8	6-3-4x4	217	6.1	192	90-3200	4-3, 5x4, 7	N Chev Own	8	SF	A 6.17	541	710	A				

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ICC WEIGHS HOURS FOR NON-DRIVERS

(CONTINUED FROM PAGE 33)

to bring these labor groups under Wage-Hours regulations; and they also specifically opposed any extension of ICC "physical examination" of motor truck industry employees.

J. Ninian Beall, counsel for the American Trucking Associations, Inc., called as his first witness J. L. S. Snead, Jr., maintenance engineer of Consolidated Freightways, Inc., Portland, Oregon. This company employs in its seven shops and loading places about 130 journeymen mechanics, helpers and apprentices, all union members. As related to this classification, Mr. Beall pointed out that there was considerable difference in the labor classifications in different parts of the country.

Mr. Snead testified that about one-half of prospective union mechanics sent to his company were tentatively selected, and about one-fifth of those who tried out proved entirely suitable to be retained by his company. Most of the incompetence, he said, was due to lack of previous experience by the mechanic with their type of heavy-duty equipment.

All new company mechanics and apprentices are helpers, before being permanently hired and are given the same type of physical examination as is required of all company drivers. In the opinion of the witness it is desirable, for reasons of shop competence and company operating safety, that all mechanics and helpers should be able to meet the minimum ICC requirements imposed on drivers. These qualifications should include, as brought out by the direct examination of the witness, the following:

"No loss of foot, leg, or arm" . . . since the mechanic must do heavy and exacting work.

"No mental, nervous, organic, or functional disease likely to interfere with safe driving" . . . since these minimum physical needs also would apply to essential machine shop competence.

"No loss of fingers, foot, leg, etc., likely to interfere with safe driving" . . . also applicable to exacting shop work.

"Visual acuity," including "ability to distinguish red, green, and yellow" (TURN TO PAGE 60, PLEASE)

Line Number	MAKE AND MODEL	WHEEL-BASE		Chassis List Price	Gross Vehicle Weight (See definition) for Normal Service	TIRE SIZES		Chassis Weight (See definition)	ENGINE DETAILS						TRANS-MISSION		REAR AXLE		FRONT AXLE		BRAKES				C-A Dimensions (Min. Std. W. B.)	Type																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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Year after year, more Chevrolets than any other make are chosen by America's truck buyers as the best buy in the highly competitive truck market. There could be no stronger endorsement of Chevrolet than this—that American business men deem it the best value, and *say it with orders.*

CHEVROLET MOTOR DIVISION, General Motors Sales Corporation, DETROIT, MICHIGAN

FEATURES

★ 90-HORSEPOWER VALVE-IN-HEAD ENGINE . . . 174 FOOT-POUNDS OF TORQUE ★ NEW RECIRCULATING BALL-BEARING STEERING GEAR ★ NEW, MORE COMFORTABLE DRIVER'S COMPARTMENT

60 MODELS

ON NINE LONGER WHEELBASES . . . A COMPLETE LINE FOR ALL LINES OF BUSINESS



CHEVROLET

(CONTINUED FROM PAGE 58)
low" . . . applicable also to the eyesight needs of mechanics in inspecting new or worn parts, making repairs and adjustments; and also their ability to select proper colors of reflectors and markers used in shop repairs.

"Adequate hearing" . . . needed likewise for proper adjustment of brakes, testing of metal parts by striking them to determine their soundness, and also the need of good

hearing in making motor adjustments.

"Not addicted to liquor, narcotics, and drugs" . . . which addiction was declared as hazardous to shop safety as to driving safety.

"Age" . . . as related to the need of good judgment, and reliability by mechanical workers.

"Knowledge of English" . . . needed by shop workers to take work directions and to read instructions.

Mr. Snead testified that his com-

pany regulations were much more strict than the general ICC minimum driver requirements. The company program for worker advancement requires apprenticeship of four years to become a journeyman mechanic, and a year of training is considered necessary to become proficient as a helper.

Dave Kaplan, counsel for the International Association of Machinists, brought out in cross examination the contrasting viewpoint of the unions, as related to the union demands for the shorter hours of work prescribed generally by Wage-Hour regulations and their general opposition to any extension of ICC physical examinations.

The second witness called by the ATA counsel was J. L. S. Snead, Sr., father of the first witness, and manager of the freight operating department of Consolidated Freightways, Inc. In general, he testified to the opinion that the same minimum ICC driver regulations should be applied to all loaders and loaders' helpers. His company has 250 to 300 union employes in these groups, and most of them also are drivers part of the time. Because of these driving duties, it was his opinion that these groups should be made subject to exactly the same ICC regulations as the company drivers.

For eight or nine years the company has required of these groups the same type of physical examinations as they require of their drivers, but described as "much more strict" than the ICC minimum requirements. Cross examination also brought out that many of their regular highway drivers are recruited from these groups, hence the need of equally strict physical and other requirements.

It was brought out during examination of these two witnesses, that some company accidents had been caused from improper truck loading. Such accidents were not excessive in number but among the most costly of all company accidents; hence the proclaimed need of regulations in selection of good loaders. There was considerable debate as to what requirements should be made for temporary workers; and seemingly a rather general final agreement that no ICC regulations were essential here, since such workers are mostly

(TURN TO PAGE 62, PLEASE)




At left—No. 60-L Extension Lock (right-hand), with Locking Cylinder and two keys. Made in one piece, with inside handle.

HANSEN LOCKS


with Locking Cylinders

ILLUSTRATED are two of the new Hansen Locks with Locking Cylinders. Advanced in design, distinctive in appearance, widely adaptable and flexible in application, the Locks shown make it easy to protect merchandise against loss or theft.

Other types of Hansen Locks are also equipped with Locking Cylinders, as well as the products shown. Because of these and numerous other new types of Locks, Hinges and Handles, the Hansen line is now more complete than ever before.



At right — No. 124-L Slam-and-Take-up Lock with Locking Cylinder and two keys. Lock can be supplied for use with either Flush or "T" Handles.



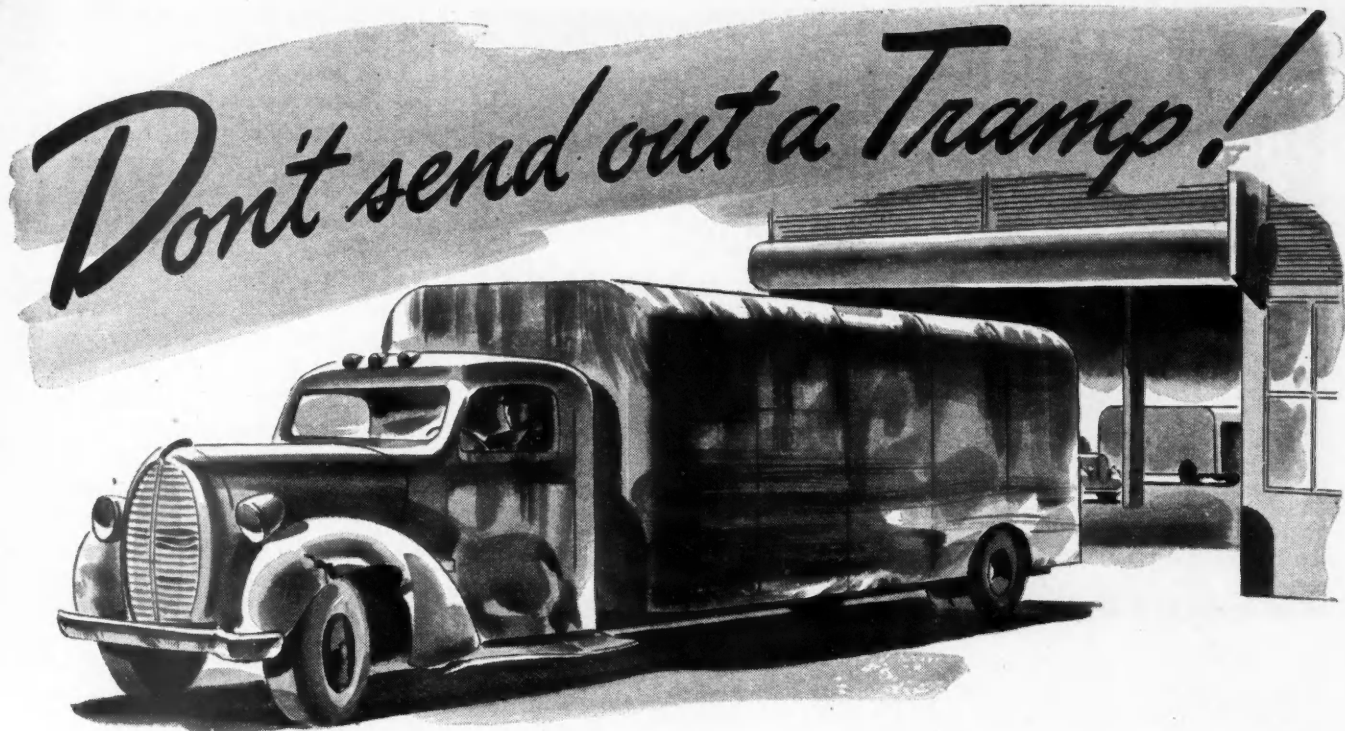
Many New Products Added to Hansen Line

New locks with locking devices—new slamming and slam-and-take-up locks—new rear-door, new sliding door, new cab and extension locks—new handles—are among the additions to the Hansen line of commercial body hardware.

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Your Service is Judged by the Looks of Your Fleet

• You can't convince people that your service is first-class if your fleet looks third-rate. Spruce up your fleet. Put its looks on a par with the quality of your service. It's the best way to advertise the efficiency and dependability of your business.

You'll be surprised how easily and economically you can set up a periodic fleet painting routine in your shop—when you use

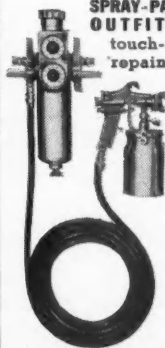
modern DeVilbiss Spray Equipment. It turns out paint jobs faster—without "stalling" fleet operations. It reduces sanding time—saves materials—keeps operating costs down. It's good advertising to give your fleet good looks—and it's good business to do it with DeVilbiss Equipment. See your jobber, today.

THE DEVILBISS COMPANY • TOLEDO, OHIO

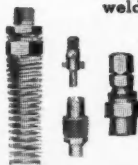
Canadian Plant: WINDSOR, ONTARIO

DEVILBISS SPRAY SYSTEMS

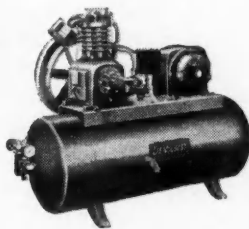
SPRAY-PAINTING OUTFITS for touch-up and repaint jobs.



HOSE FOR ALL USES
—Air, oil, water, welding, car heater.



HOSE CONNECTIONS—Permanent or quick detachable types.

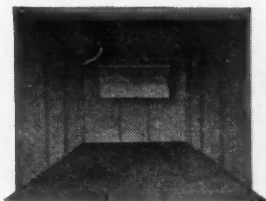


AIR COMPRESSORS—For every requirement.

OIL GUNS for high speed chassis lubrication. Spray or stream types.



AIR DUSTING GUNS for removing dust, water, metal chips.



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NO-COST Fleet Laboratory Service means

LOW-COST MAINTENANCE!



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 FLEET LABORATORY SERVICE

For Interum Manufacturing Co. File No. W-965
 Address Midville, Penn. Date 2/1/41
 Checked by JBS Approved HVC Chief Eng. Lalo
 Subject of Analysis Crank Case Drainage

TEST	REPORT	ADJ. QUOTE	GRADE QUOTE	TEST	REPORT	ADJ. QUOTE	GRADE QUOTE
GRAVITY	27.2	✓		ASH	0.39%	✓	
FLASH	285	✓		PRECIPITATION	20%	✓	*
FIRE	500	✓		SLUTION	4.0%	✓	*
W. @ 100° F	223	✓		EXSLING RESINS	0.38%	✓	*
W. @ 210° F	65.1	✓		WATER	None	✓	
CARBON	224%	✓					

(For General Comments and Recommendations See Other Sheet)

You don't spend a penny for Valvoline Fleet Laboratory Service. But it can save many dollars on every truck in your fleet. Here's why: Our engineers analyze not only your crankcase drainings, but fuel, equipment and operating conditions as well. Then you get *Corrective Service Reports* that locate causes of grief and suggest ways and means of eliminating them. This exclusive Valvoline service, plus Valvoline quality lubricants, is cutting costs for fleet operators everywhere. Ask about it NOW!



VALVOLINE—now celebrating **FIRST Diamond Jubilee in Oil Lubrication History**—created the **FIRST All-Purpose Gear Lube, Valvoline "X-18"**. Greatly reduces inventories — solves fleet greasing problems.

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FLEET SERVICE
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VALVOLINE OIL CO., 580 E. Fifth Street, Cincinnati, Ohio.
 Send me, without cost or obligation, your new Valvoline Fleet Laboratory Service WALL CHART, enabling me to keep complete record on my trucks for instant reference.

NAME _____
 COMPANY _____
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GET OUT OF TROUBLE, STAY OUT OF TROUBLE -- WITH VALVOLINE

(CONTINUED FROM PAGE 60)
 only "extra help" and also always working under supervision.

Harold Willings, safety director, Huber & Huber, Louisville, Ky., was next called. About nine-tenths of their garage mechanics (but not machinists) also have the status of drivers, and many of their loaders also are drivers. For this reason, among others, he thought that all company employes who occasionally drive, or who may be developed into drivers, should be under the uniform

minimum ICC regulations for drivers.

He mentioned that of 17 mechanics in one garage, four or five had recently been "drafted" and that it was proving "extremely hard" to find qualified mechanics to replace them. He also reported other incidents of men employed by truckers being attracted into defense industries "by higher wages and longer hours"—that is, the chance to earn more money through larger possible hours of overtime pay.

C. G. Anthony, vice-president of

Pacific Freight Lines, and also associated with other companies in California and Arizona that have 780 pieces of equipment, testified likewise to the opinion that all mechanics, loaders and drivers' helpers should be placed under the same minimum ICC regulations as are drivers. In his company shop there are no "helpers," the workers being designated as either journeymen mechanics or as one, two, three and four-year apprentices. About one per cent of their accidents are chargeable to faulty loading; and more than nine per cent to "negligence of drivers' helpers." Hence his opinion that all drivers helpers should be carefully regulated for safety reasons. He thinks that such ICC regulations should prove even more important for the small operators than for the large ones, since the average employe of the small operator necessarily must do a greater variety of services, including occasional driving. "Some of our worst company accidents," said Mr. Anthony, "have come from road clashes with smaller operators, whose drivers in general are less highly trained, and do not have our selective standards as regards to physical examinations."

He also mentioned that during the past six months in the Los Angeles area where the airplane industry is being speeded up, he knew of shops which had lost "one-half of their men to this industry," and they were finding it "difficult or impossible to replace these men."

Morris H. Landau, manager of the Delivery Group of the National Retail Dry Goods Assn., with 5700 stores with delivery fleets, submitted a formal request to the Commission, asking that the helpers of their drivers in interstate operations be placed under the same ICC regulations as their drivers. This was asked on basis that these helpers also be permitted the same hours of exemptions as has been granted already by the Commission for their regular drivers—that is, no fixed maximum hours during their annual peak delivery period for December 10 to 25. Their members have about 20,000 trucks, but only about 300 to 350 of them are in interstate operations and subject to ICC regulations.

Carl R. Olson, vice-chairman and general manager of the Operators Eleven-State Area Committee, stated

that his committee represented the labor relations of 824 operators with union labor agreements involving about 25,000 driver members. The "area" includes 11 primary states and three other border states encircling Chicago. In his opinion, ICC driver regulations also should be extended to include mechanics, loaders and drivers' helpers, and he endorsed the ICC driver physical examination program. He thought it especially needed at this time, with an increasing trend toward the development of drivers from company dock workers and drivers' helpers. This was advisable also because a large percentage of all the employees of the small common carrier operators, and the employees of the small terminals of the larger operators, have general duties usually including some driving. He reported increasing physical examinations of all mechanics and dock workers, due chiefly to workmen's compensation requirements.

W. A. Taussig, automotive engineer of Burlington Transportation Co., introduced an "illustrated lecture" novelty into one hearing, showing charts to prove the highly technical nature of the needed skills of a good automotive mechanic. He contended that many so-called mechanics did not have such skill, and advocated that the Commission should set up skill standards as a part of their regulation program. In cross examination by C. D. Cass, American Transit Association, Mr. Taussig was driven to the admission that a really "good" mechanic, devoting all his time to the task, might be able to learn, within 16 hours, how to adjust lights—within six weeks how to adjust steering—and within three months how to adjust air brakes.

H. E. Boysen, secretary and general manager of the Labor Relations Division of the Pennsylvania Motor Truck Association, representing about 250 small and large carriers, favored the regulation program endorsed by the ATA, and submitted a booklet containing mechanic's apprenticeship standards worked out and endorsed by a cooperating group of operator and labor union representatives.

Gilbert H. Gilhausen, director of personnel and safety of Norwalk Truck Co., frankly admitted in his testimony that his company had been developing in operating scope more

rapidly than the effective growth of their safety activities. The result had been a considerable number of accidents attributable to truck mechanical condition. Hence the opinion that there would be much practical value to his company from ICC regulations applied to their mechanics and loaders. Some of the value, he thought, would be the "psychological" effect of such regulations on their workers.

Morgan B. Speir, Jr., of the Division of Safety, Horton Motor Lines,

Inc., testified that it was becoming increasingly difficult for his company to get desired new operating equipment, and that they therefore were obliged to give more attention to the overhauling and repair of their present facilities. This was stated as an added reason why his company favored the extension of ICC regulations to their mechanics, loaders and drivers' helpers. They consider, he stated, all of their helpers as potential drivers; and most of their plat-

(TURN TO NEXT PAGE, PLEASE)

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First Successful PENNSYLVANIA Oil For **DIESELS** and **PEAK LOADS** in **GASOLINE ENGINES**

Valvoline H P O meets your needs for an oil that lubricates perfectly at extreme heats, and actually *cleans the engine* as it lubricates.

For the first time, a detergent (cleaning) action is embodied in a top-quality, 100% Pennsylvania oil of high viscosity index.

Valvoline H P O avoids "varnish" — cause of sticking rings and pistons—keeps motor cooler, reduces consumption

of oil, stops bearing corrosion — means longer life for your Diesels and peak-loaded gasoline engines.

Fleet operators will find Valvoline H P O the ideal oil for economical, trouble-free performance under the most severe conditions. Get the complete story today!



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Send me illustrated laboratory report and test data on Valvoline H P O, first successful Pennsylvania Oil for Diesels and peak loads in gasoline engines.

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SEND THIS
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FACTS!

GET OUT OF TROUBLE, STAY OUT OF TROUBLE -- WITH VALVOLINE

(CONTINUED FROM PAGE 62)
form workers have a variety of work requiring skills and dependability important to the safety and efficiency of their operations.

E. W. Kerwin, traffic manager of Loose-Wiles Biscuit Co., was the first direct spokesman in the hearings for the private carrier group. He introduced a novelty viewpoint which became almost fireworks. It finally developed, from the barrage of cross examination which resulted, that his appearance had been encouraged by

Examiner Snow, in the interest of bringing out a variety of viewpoints.

It was Mr. Kerwin's opinion, speaking only for his own company, that there should be no further extension of the ICC regulations. He endorsed the ICC driver regulations, including the physical examinations, and his company is applying standards even more strict to all their mechanics and loaders. But he contended that there was so little possible accident hazard from the loading of such light and bulky products

as bakery goods, department store deliveries, and the like, that there could be no possible need for the ICC regulation of motor vehicle loaders.

The cross examination included opposing views from representatives of other private carriers present, and from counsel for the common carriers. There was no cross examination by counsel for the labor unions. Opposition viewpoints reminded that a great many different private carriers were in an opposite field as regards possible accident hazards from improper loading. This would include such items as gasoline, explosives, some forms of dairy products, metals, heavy hardware, and many others. Counsel for the common carriers also reminded that the statement would not hold for mixed loadings, where the lighter articles would be subject to added hazards among other heavier goods.

It was promised that later sessions of the hearings would include testimony by other representatives of private carriers, and the attendance of Leon Banigan, president of the National Council of Private Truck Owners.

END

(Please resume your reading on p. 34)

"Now this steady at work making deliveries!"
"Why this stop?"
"Sure was a hearty lunch!"
"Time! 3 hours of steady deliveries!"
"Standing idle for an hour! Wonder why?"
"Reports at 6:30 get overtime again!"
"Hello! Truck up! Last night, why?"
"Marsh! It waited an hour for the load!"
"It had start! Didn't even leave the garage until 8!"

DATE 2/11 NAME Frank
CHART NO. 517
PRINTED IN U.S.A.

Now You can "SEE" When YOUR Truck Wastes Time!

You Can Easily "Keep an Eye On It" All Day Even When It's Out of Your Sight

• Busy time—Idle time! You get it at a glance.

Those blank spaces on the chart show idle time, at 3 or 4 dollars an inch! You knew some of it was going on. But when you SEE these delays staring out at you—well, then you actually DO something about it.

Truck Scarcity? Whether we have it or not every truck must produce. We can't afford these days to be easy going about it. The Servis Recorder gives you all the information you need.

Shows

BUSY TIME
IDLE TIME
OVERTIME
ETC.

Write for free booklet: "Ten Ways of Getting More Work Out of Motor Trucks."

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The Servis Recorder

Tells Every Move Your Truck Makes

Transportation Engineer

Fred H. Chesnut, transportation engineer and author of a recent article in *COMMERCIAL CAR JOURNAL* on the subject of "Load Factors," has set up offices at Modesto, Cal., and is available for consultation on all problems relating to truck transportation. His experience includes many years as both fleet operator and truck manufacturer's representative. He recently served in the Transportation Dept. of the California Railroad Commission.



This Brooks Van Ette-Ford outfit was on hand at the Indianapolis time trials loaded with the latest in safety equipment. The men are E. H. Perkins (left), president of Transportation Engineers, Inc., and H. C. Doss, sales manager of Ford Motor Co.



For low cost per mile
**PICK A
 FORD TRUCK**

MANY BIG FLEET OWNERS run their trucks night and day—carrying capacity loads thousands of miles every week of the year.

They watch costs closely. Because the difference of a fraction of a cent per mile, one way or the other, may mean profit or loss.

These operators buy Ford Trucks because they

stand up under the grind and save on running time. They buy them for rapid acceleration, for easy handling in traffic and for high speed performance. They buy them for low first cost, low fuel consumption and low cost service. Briefly, they buy Ford Trucks for the very things you need in your trucks, whether yours is a heavy hauling job or light house-to-house service. Ask your Ford dealer for an "on-your-job" test with your own loads and your own driver.



FORD TRUCKS
 AND COMMERCIAL CARS



NEWSCAST

(CONTINUED FROM PAGE 48)

from South Bend are J. H. Scharnhorst, G. L. Stallings, M. N. Wilcox and J. E. Wilders.

Fruehauf Trailer Co. announces the appointment of Frank Study as regional manager at Atlanta. His territory will include Atlanta, Birmingham, Charleston, Charlotte, Jacksonville, Nashville, Norfolk, Richmond, Savannah and Wilson, Ga.

The appointment of Charles B. Kass as coordinator of performance and endurance tests has been announced by the Ethyl Gasoline Corp., New York. He was for-

merly with Standard Oil Development Co.

Carl Stieger, prominent Wisconsin industrialist, has been named director of The Four Wheel Drive Auto Co., and S. H. Sanford, manager of FWD's western sales division, has been made secretary succeeding the late Frank Gause.

John A. Graham has been elected Honorary Chairman of the Board of Purolator Products, Inc., Newark, N. J. He is succeeded as president by Ralph R. Leyte, former executive vice president.

The Pennsylvania Rubber Co., Jeanette, Pa., has named Herbert Wolfe as manager of its Chicago district; C. E. Steele has been appointed as manager of the New

York district and W. H. Skinner as branch manager in Indianapolis. Both Mr. Steele and Mr. Wolfe came from the Pittsburgh office of Firestone Tire & Rubber Co. Mr. Skinner was formerly purchasing agent for the Indiana State Highway Commission.

Carl J. Andrae, recently named assistant sales manager, replacement division, Wilkening Mfg. Co., Philadelphia.



Assignments of new men to three western sales territories are announced by Van Norman Machine Tool Co., Springfield, Mass. They are: A. L. Davidson, Pacific Northwest; R. C. Holroyd, northern California, Oregon, Nevada and Utah, and A. D. Catterlin, southern California and Arizona.

Daniel D. Wile, general factory manager of the Kellogg Division of the American Brake Shoe and Foundry Co., Rochester, N. Y.



Reo Motors, Inc., has elected four new directors to fill vacancies on the board. They are James Dervin, Reo purchasing agent; Joseph J. Shearer, Jarvis Engineering Works, Lansing; Birney Adams, assistant secretary of Motor Wheel Corp., and Ray Potter, one-time president of the old Lansing National Bank. Frank R. McKim, former assistant secretary-treasurer, is now secretary and assistant-treasurer.

Geo. L. Brunner, Jr., recently elected executive vice-president of Brunner Mfg. Co., Utica, N. Y.



FWD April Record

FWD truck production for the month of April exceeded \$2,000,000 in volume, according to Walter A. Olen, President and General Manager of the Four Wheel Drive Auto Co. The firm is operating on a twenty-four-hour schedule and, in addition, has farmed out work to thirty manufacturers in the middle west. Thirteen hundred and fifty people are now employed at the Clintonville plant, with approximately 2000 additional men working on parts in the plants of sub-contractors.

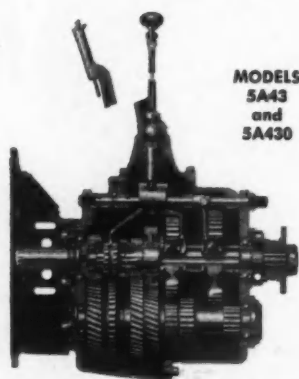
Warren H. Walker Dies

Warren H. Walker, vice-president of the Walker Mfg. Co., Racine, Wis., and one of the pioneers in the automotive equipment industry, died May 9.

**"That's Nothing
You Ought to See the
Beating My Truck
Transmission Takes!"**

For **DURABILITY**

Specify FULLER Transmissions



MODELS
5A43
and
5A430



Many a truck operator today is driving his equipment to the very limit of its capacity.

Under such conditions, the extra durability of FULLER Transmissions is doubly valuable, because it means more hauling, and less overhauling.

Every gear, every shaft, every bearing in FULLER Transmissions has been engineered for maximum strength and serviceability. That's why it pays to specify FULLER's.

FULLER MFG. CO. Kalamazoo, Mich.



SPECTACULAR PERFORMANCE

where *Hot Jobs* are concerned



SOLID, LEAK-PROOF GASKET

Only Edison Spark Plugs have the patented, spun-on, solid copper gasket, always perfectly centered. Assures 100% compression-tight fit, and never needs replacement.

There's no magic about it. The Edison HC (High Compression) Spark Plug does a spectacular job in today's "hotter running" engines because it's the one plug specially engineered for the purpose.

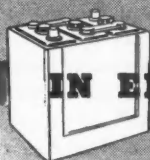
With Edison HC's you get premium performance with regular gas . . . increased power and greater fuel economy . . . less "ping" . . . longer life; because they dissipate heat more rapidly and deliver a hotter spark at highest speeds . . . burning the charge more completely.

Put a set of Edison HC's in your hottest job. You'll be dollars ahead in performance and economy. Made in all sizes and heat ranges. And they cost no more!

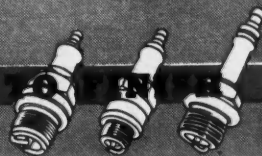
EDISON-SPLITDORF CORPORATION, West Orange, N. J.



Edison SPARK PLUGS



IN ELECTRICITY, IT'S Edison FROM START TO FINISH



YMCA CANTEEN

(CONTINUED FROM PAGE 32)

frame. All corners are rounded and the top is of specially treated water-proof duck. Since for use in Canada there is no need for camouflage, the body and cab are painted with grey-enamel against which the red and black of the Y.M.C.A. triangle stand out in sharp relief. The top is painted aluminum.

The right side of the body is com-

posed of two panels, the upper panel being hinged at the top so that it can be raised as a canopy while the lower panel, hinged at the bottom, drops to form a counter 7 ft. 6 in. long by 12 in. wide. When in the opened position the lower panel is supported by chains. At the rear is a single sheet steel door which slides up along the roof while a speaker's platform, 15 in. by 34 in., slides out from under the body of the car for use in showing motion pictures. The rear of the car is protected by channel

iron. On the left side are two compartments for tools and baggage. A letter slot for soldiers' mail is located at the rear of the car and the body and cab are connected by a sliding panel.

Inside, the body is lined with damp-proof veneer and has over 100 sq. ft. of shelving of three-ply fir. On the right side, beneath the counter, is a 30 in. by 18 in. serving table with a well at each end in which attendants can stand. In the center, on the left side, is a 14-gal. copper tank heated by two gasoline burners. Shelving, baggage compartments and space for eight two-gallon thermos jugs take up the balance of the left and front walls. Light is supplied by two dome lights in the ceiling and a gasoline lantern. Heat is supplied in winter by a gasoline stove. In order to prevent concentration of gases and steam within the car, a vent has been placed in the roof over the boiler. Equipment of the car includes two stretchers, blankets and a shovel. Two movable shelves can be placed in position for convenience in serving.

The car has a capacity of 30 gallons of hot drinks which is sufficient to serve up to 500 men at one time. It has a cruising radius of 350 miles and will carry a staff of two men. At Camp Borden, Ontario, the first Canadian tea car is now on 24-hour duty serving men on the rifle ranges during the day and airmen on night-flying duty. Other War Service organizations such as the Salvation Army and the Canadian Legion have ordered cars of similar type and the fleet of tea cars in service in Canada is expected to increase rapidly. These cars, however, will be of practically the same design and not, as in England, of many types and sizes.

END

(Please resume your reading on P. 33)



Missouri Portland Cement Co. at Fort Bellefontaine bought this 13-cu. yd. side dumper for tough-going quarry operations. The tractor is a Mack LFT, the trailer was built by Easton (Pa.) Car & Construction Co.

**Upsets all precedents
Startling cost reductions
Amazing mileage records
New! Better! Modern!**
At Last

● Here is the revolutionary new truck tire for which you have been waiting! Extra tough carcass of Pennsylvania's Super-test Cord gives 30% more strength. Dual Purpose Tread checks heat and gives longer wear. Exclusive new Super-Pressure Curing Process makes tread amazingly resistant to shocks and abuse.

Convince yourself . . . test a Turnpike under actual operating conditions. You'll find it all we claim . . . and more!

PENNSYLVANIA RUBBER CO.

General Offices & Factory: Jeannette, Penna.

PENNSYLVANIA
Turnpike
TRUCK TIRES



A REPORT FROM WYOMING



THREE MONTHS out of every year, at the peak of the season, my trucks must operate continuously, 24 hours a

day," writes a fleet operator from Wyoming.

Tough punishment? Sure it is. But it's typical of the problems brought to Socony-Vacuum Fleet Engineers all over the country.

"I've used your oils exclusively for my entire fleet," the same man continues, "and have found the rings stay *free* and pistons *clean*—with virtually no trace of gum or sludge deposits. And not a single unit has been out of service due to faulty lubrication!"

SERVICE FOR YOUR FLEET!

1

YOUR PROBLEM IS ANSWERED!

Nothing is taken for granted, no step is overlooked. Socony-Vacuum's fleet engineer analyzes your fleet by makes and models, for type of service, loads carried, operating temperatures, engine condition, maintenance methods. He then helps your men carry out money-saving operating and maintenance improvements.

2

LUBRICANTS TO FIT!

Socony-Vacuum's engineers are not guided by guesswork. They base recommendations on scientific tests—select products for your equipment from Delvac "500 Series" Oils, Sovac Truck-Bus Oils, Mobilubes, and Mobilgreases.

3

75 YEARS' EXPERIENCE!

And every Socony-Vacuum fleet engineer has been trained to apply this experience—greatest in the oil business—to help you hold maintenance and operating costs to a minimum.

4

NATION-WIDE SERVICE!

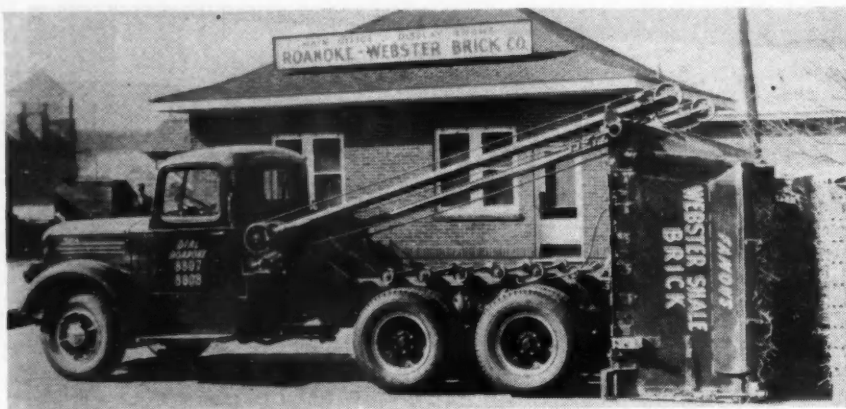
Across the U. S. A., you will find our fleet engineers available to recommend lubricants to meet *all* conditions on your routes. SOCONY-VACUUM OIL CO., INC., and Affiliates: Magnolia Petroleum Co., General Petroleum Corporation of California.

Address Truck-Bus Division
Socony-Vacuum Oil Co., Inc.
26 Broadway, New York City

YOU
BENEFIT FROM

75 YEARS'
LUBRICATION EXPERIENCE
1866-1941

Fleet Engineer



Carrying 4000 bricks to the load this unusual rig "puts 'em down easy" and neatly stacked. The pneumatic gripping device at rear eliminates the tail gate. It's a Mack six-wheeler



Standard Abrasion Test on Kem Transport Enamel Panel.

BUT... Good Training for a Truck Finish!

We run our Kem finishes ragged on this little laboratory "cinder path". Grind the life out of them under its spinning abrasion wheels. Only those that click off the most laps of long life ever reach the comparative rest of riding on your trucks under a barrage of dirt, grit and sand!

That is, if they pass as well many other equally strenuous tests. Our test of adhesion, for instance. A hammering hump machine proves "stick-to-it-iveness" as nothing else can. The Flexibility Test, for another. Here finishes must touch their toes, bend double over a 1/4 inch rod—without breaking their backs! Then

there's the 85° Humidity Test—given by a coffin-like box where finishes sweat for weeks. Not to forget the Accelerated Weathering Test under a blazing, carbon-arc "sun"!

All of which means tougher, longer-lasting, better-looking truck finishes for you. Something you won't have to prove because we have—under conditions more gruelling than your trucks ever meet on the road!

As for color... see them yourself. Kem Transport Enamel color cards, as well as full particulars, are yours for the asking. Write the Sherwin-Williams Company, Cleveland, Ohio (and all principal cities).



SHERWIN-WILLIAMS
KEM TRANSPORT ENAMEL

IN THE WAKE OF THE WASH

(CONTINUED FROM PAGE 31)

trucks and in severe weather all trucks are hosed off. Each truck is polished about once a month. Although this work is done by outside forces we consider it none-the-less important for the clean appearance of trucks is a vital asset in this highly competitive laundry business.

Our two mechanics' hours are so staggered that at least one is always on duty from the time the first truck rolls out in the morning until the last one comes in at night. Each driver is held responsible for the mechanical condition of his truck, executing his responsibility by promptly reporting any sign of mechanical trouble that occurs to his truck. There is a special form provided for this purpose. The original is attached to the windshield and serves as a shop ticket for the garage. The duplicate is sent to the office. As soon as the necessary repair is made, the duplicate is also sent to the office where it is compared with the original and the work done is checked against the particular truck account. Minor irregularities are attended to before the mechanics go home. Trucks needing major repairs are routed to the shop.

In addition to handling these jobs reported by drivers the shop also maintains a strict preventive maintenance routine. We have 42 trucks and 40 active routes. We work five days a week. That means that two

(TURN TO PAGE 76, PLEASE)

STILL SOCKING 'EM OUT OF THE PARK!

● Without let-up Hastings Sales continue to rise. Each year since 1936 Hastings Sales have shown an increase over the preceding year... in some years more than doubling.

But the more homers you hit one year—the tougher it becomes to break the record the next. So we're especially gratified at this year's record—which shows a healthy increase over last year's.

Fleet men who standardize on Hastings Steel-Vent Piston Rings are backed by hundreds of thousands of successful installations—in every field. Hastings' Sales Record bears that out.

Today—switch to Steel-Vent—the ring that's tough on oil-pumping but oh so gentle on cylinder walls.

HASTINGS MANUFACTURING COMPANY, HASTINGS, MICH.
Piston Rings • Piston Expanders • Valv-Rings



HASTINGS

STEEL-VENT PISTON RINGS

U. S. Patent Nos. 2,148,997, 2,175,409

Stop Oil-Pumping • Check Cylinder Wear

(CONTINUED FROM PAGE 74)
trucks, always in reserve, can be routed to the shop for repairs each working day and simple arithmetic shows that each truck normally comes into the shop once each four weeks. Our average mileages run between 800 and 1500 miles a month and normal procedure calls for lubrication and a complete mechanical check at the time the truck comes into the shop.

This check includes filling and cleaning the tops of all batteries (bat-

teries are also filled at two-week intervals), checking tire condition, changing oil (average about once each two months) lubricating, testing brakes and steering (for play and toe-in) and a complete check of fuel and ignition systems. In addition, other needed repairs are noted and if they cannot be handled that day, the truck is routed back to the shop as soon as possible.

We're particularly proud of the work Jim Barada, our shop foreman, has done in fitting out and maintain-

ing our little shop. It only accommodates three trucks at a maximum (the normal is two) but we feel it is unusually complete for a fleet of our size, and that it has much to do with the overall economy with which the fleet operates. To begin with, there is a sizable work bench equipped with vise and electric grinder. Nearby there is a tool rack fitted with doors that can be closed and locked. This houses the bulk of our tools, including body and fender tools and the smaller equipment such as wheel and gear pullers, two electric drills, an hydraulic bleeder, tire irons and so on. Next is a shop-made lubrication rack that contains hand grease guns and storage drums for the various types of lubricants needed.

On the opposite side of the shop are similar compartments that hold the acetylene welding equipment, a gasket board containing an assortment of all needed sizes, and even a little kitchenette which provides obvious comfort for the staff. All of the various compartments have been fabricated from old metal signs, painted aluminum and made to appear as attractive as they are serviceable. The concrete floor is painted at periodic intervals and scrubbed clean at least once a week. We also have a portable chain hoist, which comes in handy for an occasional job that requires engine removal or other heavy lifting.

There is also a shop-made service lamp of rather unusual characteristics. The base consists of an old cast-iron brake drum. The telescoping vertical section is made up of two lengths of ordinary iron pipe with a solid rod in the middle. Attached at right angles to this is another bent rod on a 360 deg. swivel. On the end is the socket and a medium-sized reflector. The result is a light that can be used for anything from a differential repair to a job inside the cab or even on the roof with equal ease. It always stands on its own base without auxiliary support of any kind.

An adjacent room houses the parts department. Here we make a practice of keeping on hand about two dozen tires (we use recaps the same as new, pulling our new tires as soon as the tread wears smooth). There is an assortment of inner tubes, a half dozen spare batteries, usually kept

(TURN TO PAGE 78, PLEASE)



LINK-BELT ROLLER BEARINGS Assure Amazing Performance!



Bearings—particularly front wheel, differential and rear axle—have a lot to do with the performance of any bus or truck. When they wear they reduce efficiency—increase power costs—and make the bus or truck harder to handle in traffic. Take any such job and replace the old bearings with Link-Belt Roller Bearings and you'll see an amazing change. It will run smoother—need less gas per mile—and the driver will beam over its easy handling. There's a real reason behind all this—your jobber knows the secret—ask him to give you the low-down on Link-Belt Roller Bearings today!

LINK-BELT COMPANY

519 N. Holmes Ave., Indianapolis, Indiana
Warehouses in all principal trading centers
Made by the makers of the famous
Silverstreak Silent Timing Chain!

LINK-BELT
SHAFTER
ROLLER BEARINGS



When
BECKLEY BROTHERS
CROSS THE SIERRA NEVADAS
with 20 tons of beef on the hoof



...they rely on Thermoid for safe, economical STOPS

Beckley Brothers, of Stockton, California, one of the big factors in western livestock transportation, writes another chapter in the record of Thermoid Brake Lining performance. And—what a chapter!

Their route stretches over mountain and desert, all the way from Idaho to California. They operate units of 68,000 lbs. gross each.

Crossing Donner Summit, they climb to 7000 feet—and then drop to sea level in sixty miles. What's more, because of the nature of the

cargo, schedules must be regular—and fast.

Ever since they became Thermoid users, Beckley Brothers have been more than pleased with brake lining mileage and the reduction in maintenance costs. And their drivers are completely satisfied with Thermoid performance!

Reports like this make us more confident than ever in saying: when you try Thermoid Brake Lining, give it "the works." Put it on your toughest unit and let the results determine whether you specify Thermoid for your fleet!

Thermoid

CUSTOM-BUILT BRAKE LINING SETS • CBB SETS
THERMO-BLOCKS FOR HEAVIEST DUTY

★ THERMOID COMPANY ★ *Trenton, New Jersey* ★

(CONTINUED FROM PAGE 76)
on the charging rack, and a supply of fast-moving replacement parts. These include complete generators and starting motors, armatures, fuel pumps, carburetors, distributor heads, spark plugs, breaker points and other frequently replaced units. The fleet is sufficiently well standardized that at least one of each of these units can be kept in stock for each type of truck. Where practical, we use rebuilt units, obtained from local distributors, but we never depart

from a policy of buying only branded merchandise of unquestionable quality.

Except for painting and major body work, which we farm out to local shops, we handle all maintenance in our own shop. This includes brake relining (we have our own riveter and press), and all engine repairs up to the rebore. When a rebore is needed we usually trade the truck for new equipment. Since our average mileage is not much over 10,000 miles a year we can keep the trucks

at least five years before this procedure becomes necessary.

Our body color is a rather dark cream with reddish brown trim. It is reasonably durable and needs repainting on the average of once every 24 months. Our accident record is such that major body repairs have been almost eliminated and the minor fender and body straightening can be handled with our own tools.

Like the trucks themselves, we feel that drivers also must look immaculate to properly carry out their duties as customer contact men. Hence it is our policy that drivers never make mechanical repairs or even change a tire. When road repairs are necessary they are instructed to contact specified service stations in the area in which the breakdown occurs. Our maintenance program, including the careful removal of tires long before the danger point, is such that these service calls are rare, averaging less than one a month.

The olive-drab driver uniforms, incidentally, are issued at small cost to the drivers and are, of course, washed in our own laundry. These uniforms consist of slacks and a heavy shirt under which drivers may wear sweaters. In winter there is also a short top coat of the same material. Our men are not limited as to the number of uniforms they use. They pay 50 per cent of the purchase price and we pay the other 50 per cent.

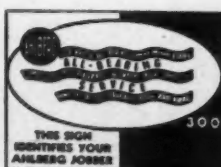
An interesting quirk that has saved us plenty of time and trouble is a special frame for our changeable signs. From time to time we have "specials" which we advertise on the side of the trucks. The old practice was to screw the frame into the steel and plywood sides, necessitating the removal of many screws each time and the gradual loosening of the mounting. All-steel bodies made a change necessary and now we have a metal frame, fitted with a piano hinge at the top and a handy catch at the bottom. Changing signs is now a matter of seconds.

A bin in the stockroom also houses a complete set of chains for each truck, but these chains do not follow conventional design. We purchased a quantity of 1/2-in. welded chain. We then cut this into lengths just big enough to go around tire and rim and fitted each of these lengths with a standard chain fastener. Three
(TURN TO PAGE 80, PLEASE)




HE HAS "WHAT IT TAKES"

NO matter what your ball and roller bearing maintenance problems may be, your **AHLBERG AUTHORIZED WHOLESALER** has "WHAT IT TAKES". 30 Ahlberg branch stocks strategically located make it possible for him to supply you promptly with every size and type of ball, roller and thrust bearing you may need to keep your equipment in A-1 condition.



Ahlberg Bearing Company

Manufacturers of CJB Master Ball Bearings
3006 WEST 47TH STREET — CHICAGO — 30 WAREHOUSE BRANCHES
Out West via PRECISION BEARINGS, INC. Los Angeles



**SHE CAN'T
GET AWAY
WITH IT...**

"RIPE TOMATO ACCELERATION"

STOPS HER!

There is a special
**COMMERCIAL
ENGINE SET**
for every popular
bus and truck

A truck with ripe tomato acceleration has no more pep than a tortoise with spring fever. Time after time, it's "left at the light" . . . time after time, it creeps into your terminals behind schedule. Ripe tomato acceleration costs money! It wastes time, wastes oil . . . and it wastes gasoline. The answer is a set of American Hammered Piston Rings . . . the one line with the right set-up for each engine condition . . . and the one-and-only POWER ring in the second groove.

FOR INCREASED POWER...DECREASED OIL CONSUMPTION...IMPROVED MILEAGE, USE

**American Hammered
Piston Rings**

a **K O P P E R S** *product*

(CONTINUED FROM PAGE 78)
such lengths of chain are supplied for each wheel together with a standard spring spreader. The result is three cross chains held in proper place by the spreader but wholly without the use of the usual circumferential chain. Two sets (consisting of three chains and a spreader each) are carried in each truck during the winter months and use is left entirely to the discretion of each driver. Since they are extremely easy to mount and because of the emergency nature of

the task we make an exception to the rule that drivers make no mechanical adjustments and let them put them on themselves when needed.

Our salesmen-drivers are considered drivers first; salesmen second. The intricate driving conditions of the metropolitan area dictate such a policy, and the accident-prone driver cannot be kept on the staff for long. To stimulate better driving we have set up an annual cash award of \$350 which is divided among the no-accident drivers.

The drivers themselves determine the eligibility of each man for the award through a self-elected committee. This committee, together with a representative from the insurance company and myself, also determine the responsibility of each accident. Sitting in kangaroo-court fashion, we study the details of each accident carefully and allow each driver to give a full account for himself.

If the driver is held to be at fault he is not eligible for the safety award. If he is held not at fault, his record is considered entirely clean. The insurance company maintains an active chart in the driver's quarters showing which drivers have been involved in accidents during the past month. In addition the insurance company issues safe-driving buttons at yearly intervals and leather wallets at yearly intervals to the no-accident men. The monetary value of the awards is negligible, but the moral stimulus is immeasurable.

We impose no penalties against our drivers for failure to meet the safety standards. In fact we do everything we can to bring the men into line. But each driver knows that if his record gets too bad the insurance company takes a hand.

Although it is against our policy to release operating figures, we can say that in the past two years, since we started taking accidents really seriously, our insurance costs for 42 trucks has been materially reduced. During the whole of 1940 total claims paid to others by our insurance company on all 42 trucks was negligible and of this small amount a large percentage of it went to one accident of a highly disputable nature but involving a personal injury. Don't forget that while accomplishing this record our trucks operated approximately 500,000 miles through an area where traffic density is unquestionably at the top of the list.

END

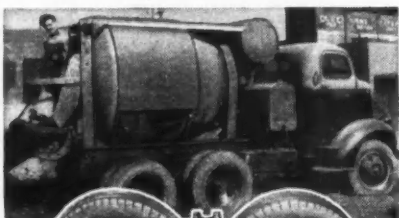
(Please resume your reading on P. 32)



One of 50 twenty-four-foot Fruehauf Aerovan trailers recently added by the Hayes Freight Line, Mattoon, Ill.

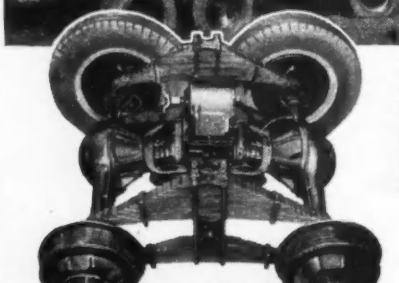
Do You Want to Save on Hauling Costs?

Here's a sure way to make substantial cost reductions on your hauling. Truck users in more than a score of industries report savings as high as 40% on investment, 30% on operating costs and 35% on upkeep expense.



SAVE ON ORIGINAL COST

You save on investment since instead of buying a big, heavy-duty truck you select a smaller unit of any standard make—one priced low as a result of mass production.



ADD A THORNTON DRIVE

Your nearby Thornton distributor will quickly add a Thornton Four-Rear-Wheel Drive—a correctly-engineered unit with all necessary reinforcements that become an integral part of your truck.



HAUL DOUBLE THE PAY LOAD

You'll have a truck that will easily haul more than twice the usual load and likewise assure better traction for hill, hole or soft ground. Thornton inter-axle two-speed transmission gives speed for the highway and big gear reduction for heavy pulling.

YOU SAVE IN EVERY WAY

First cost is far less than that of a conventional truck of equal capacity. Operating and upkeep costs are less. Speed and tractive effort are greater. Six-wheel braking provides greater safety. In fact, from every standpoint you'll save money and do a better job with a Thornton Drive.

Write today for complete story.



THORNTON TANDEM CO.

8715-8779 GRINNELL AVE.

DETROIT, MICH.

Manufacturers also of the THORNTON automatic-locking DIFFERENTIAL

"When you need TRACTION you need THORNTON"

NEW, IMPROVED SUPER-LUBRICANT

FOR TOUGHEST LUBRICATION JOBS



**BASICALLY DIFFERENT!
SPECIALLY PROCESSED!
REINFORCED!**

- 3 to 10 Times Stronger Protective Film
- Removes Hard Carbon
- More Adhesive and Penetrative
- Non-Corrosive—Safe
- Keeps Piston Rings Free
- Adds Power, Saves Fuel, Saves Wear and Shut-Down Time

**TESTED AND APPROVED
BY LEADING ENGINE
MANUFACTURERS**

LION *Naturalube*
FOR DIESEL AND HEAVY DUTY **D.H.D. OIL**

Naturalube D. H. D. is made from a rare and basically different crude oil which imparts to the finished product a 3 to 10 times stronger protective film . . . greater adhesiveness and penetrativeness . . . and ability to remove hard carbon deposits. By special processing, Naturalube D. H. D. is reinforced or fortified to resist the deteriorating effects of extreme heat and oxidation. Results — engines are cleaner; rings and valves operate more freely for longer periods; no clogging of filters, screens or oil lines (i.e. clogging attributable to oil). There is no hard-carbon scuffing; general engine performance is greatly improved; operating and maintenance costs are lower; shut-down time is minimized. D. H. D. is non-corrosive — safe. It saves wear, adds power and saves fuel. Try D. H. D.—Your money back if you don't believe it to be the *best* oil you ever used!

Write for free brochure "New Type Lubricating Oils" containing proof of Naturalube's money-saving properties and details of money-back guarantee. Address Advertising Dept., Lion Oil Refining Company, El Dorado, Ark.



Made by **LION OIL REFINING COMPANY, El Dorado, Arkansas**

Fig. 4—Monthly Truck Operations

	A	B	C	D	E	F	G	H	I	J	K	Truck Hire	All Trucks	Total
Labor and Delivery.....	104.36	221.57	118.38	190.13	159.11	194.74	196.24	174.01	173.15	164.22	157.81	.....	.....	1,851.72
Wheeling.....	13.23	24.41	11.45	35.00	25.90	34.31	35.38	29.13	37.28	28.56	30.86	.....	.....	305.51
Repairs—														
Labor, Material and Tires.....	59.45	5.30	.50	28.38	2.38	18.66	.26	7.26	2.46	.49	.48	.....	.....	125.62
Lubrication—														
Oil.....	17.54	26.26	19.11	24.60	21.33	30.39	27.84	22.19	22.19	17.76	16.15	.....	.....	245.36
Grease and Greasing.....	1.35	.94	.27	1.49	1.35	.68	.67	.81	.40	.27	.27	.....	.....	8.50
License Plates.....	2.51	2.25	2.56	1.50	1.75	1.50	1.50	2.75	1.50	1.50	1.50	.....	.....	18.07
Truck Hire.....	2.14	12.36	1.55	4.83	6.77	6.66	8.23	7.19	6.17	6.17	6.17	.....	.....	68.46
Supplies.....												218.10	.....	218.10
Insurance.....	2.79	2.79	4.45	2.78	2.84	5.70	.....	6.29	.....	.....	.....	2.22	22.08	22.08
Depreciation.....	12.74	1.01	14.16	.....	15.77	21.58	.....	28.85	30.98	27.87	27.52	.....	.....	32.70
General Overhead.....														180.48
Compensation Insurance.....													69.88	69.88
Social Security Tax.....													18.90	18.90
Excise Tax.....													5.67	5.67
Unemployment Tax.....													56.70	56.70
	216.11	296.89	170.43	288.71	237.20	314.69	272.96	278.48	274.13	245.34	239.26	220.32	173.23	3,227.75

Fig. 5—Cost Analysis for Typical Month

Truck	Model	Rated Capacity	Operating Cost Per Mile	Operating Cost Per Ton-Mile	Gallons Gas Per Ton	Miles Per Gallon	Delivery Cost Per Ton
A	1938	1-ton	\$.0562	\$.000318	.86	12.30	\$1.217
B	1934	1 1/2-ton	.0416	.000089	.46	5.74	.837
C	1940	1-ton	.0231	.000111	.74	11.70	.816
D	1935	1 1/2-ton	.0424	.000105	.49	7.50	.714
E	1939	1 1/2-ton	.0394	.000116	.51	7.65	.698
F	1939	1 1/2-ton	.0505	.000102	.59	6.88	.751
G	1937	1 1/2-ton	.0367	.000077	.51	5.00	.621
H	1939	1 1/2-ton	.0580	.000143	.44	7.21	.687
I	1939	2-ton	.0679	.000152	.40	5.21	.614
J	1941	1 1/2-ton	.0484	.000137	.41	7.50	.693
K	1941	1 1/2-ton	.0423	.000126	.39	9.10	.710
Average for Fleet			.0452	.000128	.50	7.48	.709

Operating cost per mile is computed by dividing the total operating costs, including repairs, parts, tires, gasoline, oil, lubrication, license plates, insurance and depreciation, by the total mileage traveled during the month. Operating cost per ton-mile is computed by dividing the same operating costs by the total ton-miles, which is the mileage multiplied by the tons of coal delivered during the month. Delivery cost per ton is computed by dividing the operating costs plus the labor costs of delivery by the total tonnage delivered during the month.

A COAL COMPANY KEEPS COSTS

(CONTINUED FROM PAGE 37)

average delivery and wheeling wages per ton, and the average tons per delivery.

This cost accounting system is simple enough in operation. The driver's only responsibility is to check with the Accounting Department on his delivery slips. The company mechanic must record the mileage on the gasoline and oil slips whenever a truck is serviced, see that truck num-

YES, YOU MAY QUOTE ME

"I FOLLOW THE Grey-Rock SYSTEM



NATIONAL SAFETY COUNCIL'S STANDARD SCHEDULE FOR SERVICING FLEET BRAKES

This, the first definite standard of procedure ever created for brake service, should guide the mechanic's workmanship, provide an accepted definition of complete brake service, and protect the fleet owner's investment.

By having competent mechanics follow it in your shop you will protect drivers from brake failure in emergencies, and avoid gradual development of dangerous brake conditions. Regular inspection is a vital part of this schedule.

AND CHECKS

1. Inspect and adjust wheel springs.
2. Inspect and adjust wheel brakes.
3. Make sure proper adjustment of brake shoes and of the entire brake system.
4. Check for proper operation of the brake system.
5. Check for proper operation of the brake system.
6. Check for proper operation of the brake system.
7. Check for proper operation of the brake system.
8. Check for proper operation of the brake system.
9. Check for proper operation of the brake system.
10. Check for proper operation of the brake system.

Many a fleet owner today has "discovered" that Grey-Rock's system of modern brake servicing methods is the system that really lowers maintenance costs.

Grey-Rock materials and methods protect the TIME, LABOR, AND MONEY you spend for brake service by improving fleet PERFORMANCE, by increasing ECONOMY, by saving LIVES and CARGOES.

FIRST DEFINITE STANDARDS EVER DEvised FOR BRAKE SERVICE

This complete schedule—the standard brake servicing schedule developed by National Safety Council—doesn't overlook a single operation. It assures a thorough job every time.

Grey-Rock

bers are included on invoices for parts and equipment so that costs can be assigned, maintain tire records and estimate the time that he devotes to each truck so service and maintenance costs can be allotted to the specific truck.

The mechanics of the system are handled by the company accountant who keeps a monthly record of the costs on each truck. This is available for ready reference. It is compiled from the weekly delivery sheets, the invoices on new parts and equipment and outside repair jobs and the labor records of the mechanic.

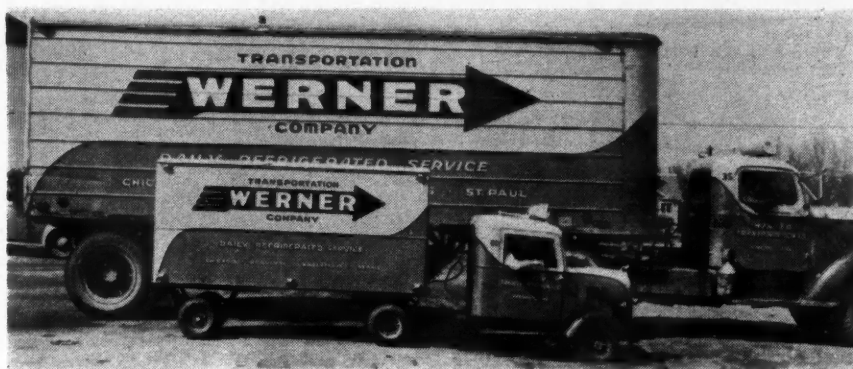
This system is simple and economical in operation, and permits the management always to have an up-to-date picture of transportation and delivery costs.

END

(Please resume your reading on P. 33)

A Safety Toast

Another toast to an outstanding safety record! Twenty-four drivers of Brasher Freight Lines, St. Louis, have accumulated a combined total of 41 years and 2,021,800 miles without an accident. Awards were presented early last month.



Werner Transportation Co., Minneapolis and Chicago, gets a lot of fun and advertising value out of this one. The tractor has mostly Austin parts, is fitted with air brakes and is used to pick up spare parts

Safety Club to Promote Careful Truck Driving

To promote safety on the highways through more careful truck driving, a new national organization to be known as the Star Drivers Club has been sponsored by the United States Rubber Co.

Carrying approval of Harold J. Jones, chairman of the safety committee of American Trucking Associations, Inc., the Club will give insignia ranging up to a diamond pin to truck drivers who pile up unusually good safety records.

Minimum requirements for membership in the Club will be a 300,000-mile record of operation without accidents for inter-city drivers, or 100,000 miles within the city

or suburbs. An accident is defined as a mishap in which death, personal injury, or property damage occurs.

In addition to membership cards, certificates will be awarded carrying the signature of F. B. Davis, Jr., president of the United States Rubber Co., and of Mr. Jones. They will state the award is made to the driver "in recognition of his long-established competency, driving ability and adherence to all principles of safe driving, with relation to his employer and the public."

The highest award will be a diamond pin given for 600,000 non-accident miles in inter-city driving and 250,000 miles in city travel.

... AND THE Grey-Rock SYSTEM CLICKS!"

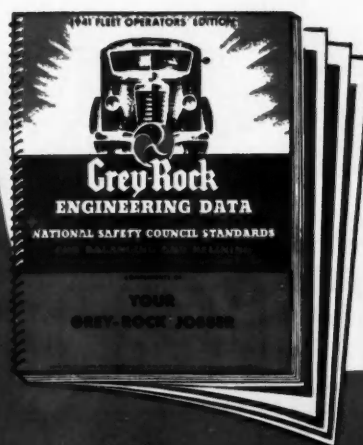
FINEST PRODUCTS

Your Grey-Rock jobber, specifying on an engineered plan, has a complete stock of outstanding replacement friction materials. Factory-selected combinations of Brake Linings for vehicles of all sizes—Grey-Rock Balanced Fan Belts—and the famous Grey-Rock Vee-Lok Heavy Duty Clutch Facings.

FINEST ENGINEERING METHODS

There's page after page—72 in all—of diagrams and instructions for your mechanics in Grey-Rock's Fleet Brake Manual. Contains the expert Grey-Rock engineering methods for servicing all vehicles—complete data on performing every operation included in the N.S.C. standards.

- Get your copy of this book from your Grey-Rock Jobber



BALANCED TRUCK BLOCKS

UNITED STATES ASBESTOS DIVISION
of Raybestos-Manhattan, Inc., MANHEIM, PA.
BRAKE LININGS • CLUTCH FACINGS • FANBELTS
AUTOMOTIVE HOSE • BELIMING EQUIPMENT



The special claim to fame for these 18-ft. Lindsay Structure bodies is that they weigh less than the company's old 12-ft. bodies and carry all their load on steel racks attached to the roof. Built by Brunswick Body Works, New Brunswick, N. J., they are mounted on White 804 chassis

What FLEET OWNERS have said about GOVERNORS:

Here is what a number of fleet owners have said after equipping their fleets with governors.

"Increased gas mileage; decreased oil consumption."

"Less bearing trouble; less piston breakage."

"Drivers cannot loaf and then make up time by fast and reckless driving."

"Longer life for motors, and greater safety."

"Reduction in the number of accidents."

"We believe they save on valve and cylinder head maintenance."

"My governors in four years have cost me \$2.60 in parts and material—they will save from 30 to 35% in maintenance costs."

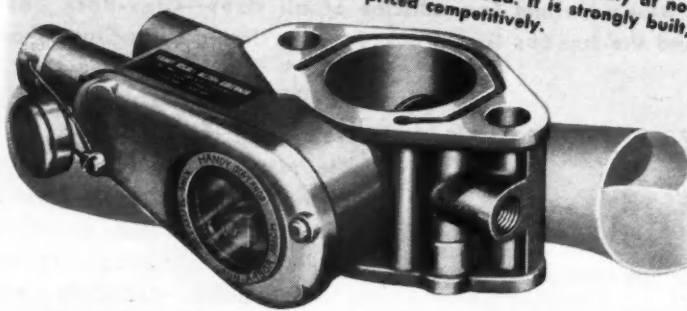
"No one factor has been more responsible for reducing costs of operation of our vehicles."

"By keeping speed down we have less damaged merchandise and fewer accidents."

"Unreasonable drivers cannot ruin motors by speeding."

"We believe all trucks should be equipped with governors."

Among governors the Handy Visible Action Governor gives you a wider range of governed speeds without the necessity of any change in the governor assembly. The Handy Governor provides stability at no load without any sacrifice of sensitivity at full load. It is strongly built, corrosion free and durable—and priced competitively.



KING-SEELEY CORPORATION • Ann Arbor, Michigan

HANDY *Visible Action* GOVERNOR

World's Largest Manufacturers of Automotive Governors

TRUCK-AMBULANCE CONVERSION-UNIT

(CONTINUED FROM PAGE 32)

nary delivery trucks into four-stretcher-capacity ambulances at a moment's notice.

The unit consists of a tubular steel framework, adjustable by telescoping to different widths and fitted to hold four stretchers rigidly in place. Its length is 90 inches and its minimum width 48 inches. Standard army stretchers are used with the unit.

The framework is placed inside the truck, thus converting the vehicle quickly into an emergency ambulance. The unit is light enough to be handled readily yet, when loaded, is sufficiently heavy to prevent sideslipping except on rare occasions. Should it be necessary to guard further against this possibility, the unit can be telescoped outward until the frame rests snugly against the sidewalls or wheel casings of the truck and, when the vehicle is extremely wide, the frame can be lashed to one side of the truck.

At a recent demonstration of the device, U. S. Army and Government officials gave their approval. An initial order for 100 frames has been placed and the Red Cross plans to recommend that all of its local chapters acquire one or more for use in time of emergency.

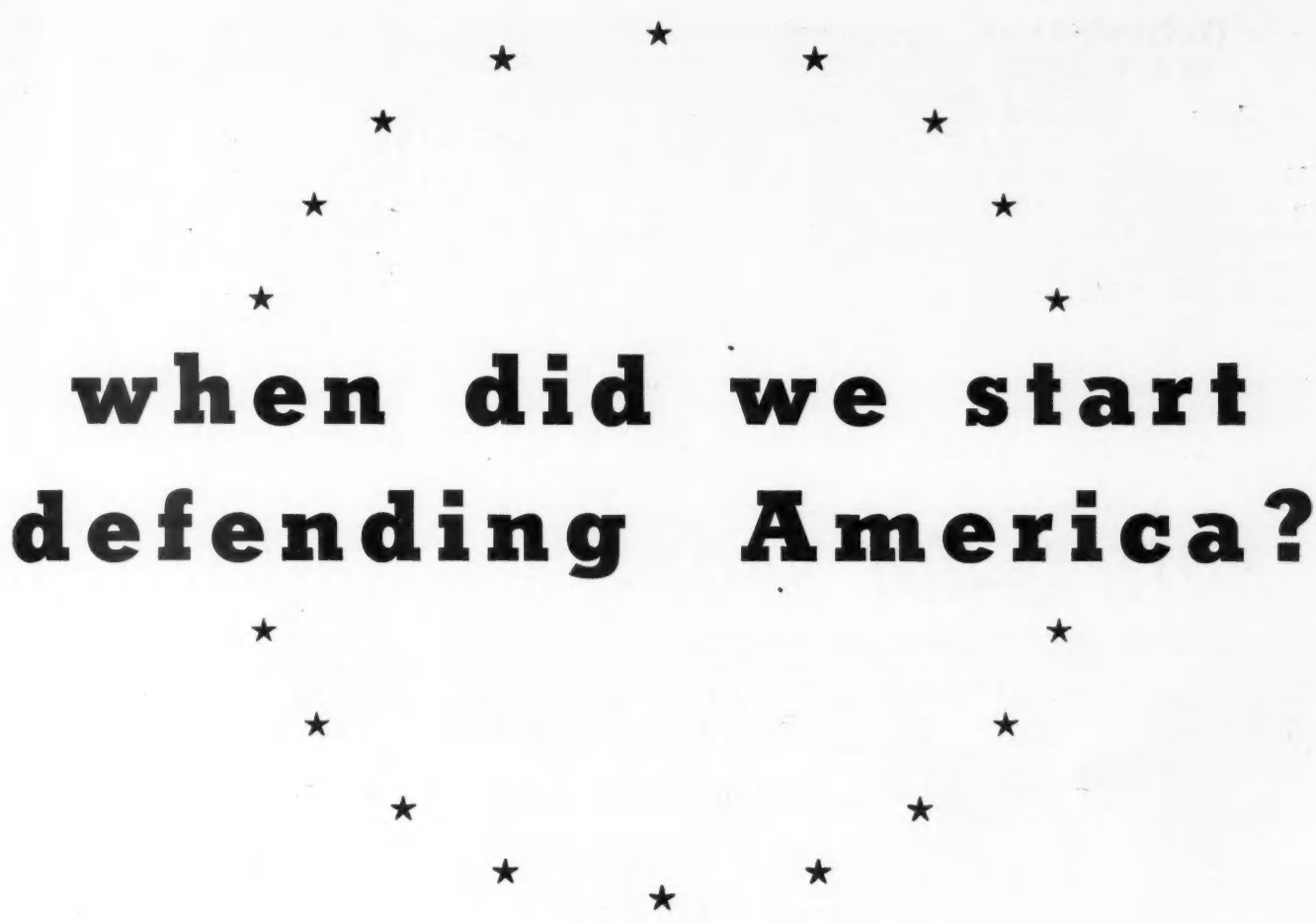
Once the equipment is obtained arrangements will be made with local stores or other delivery truck operators to provide the necessary number of vehicles, with drivers, in case of need. For each truck, chapters will provide a crew trained in first aid and other relief measures.

END

(Please resume your reading on P. 32)



Built by the Grand Island (Neb.) Fire Dept. and mounted on a 1½-ton Chevrolet this emergency unit boasts an iron lung, a resuscitator, two inhalers, two cots, flood lights, generator, and complete first aid equipment



when did we start defending America?

More than *twenty years ago*—when pacifism was not the exception but the rule—the plant facilities, research, management and labor personnel of the Waukesha Motor Company unobtrusively began a continuous, consistent, comprehensive program of national defense.

In our vast country, transportation is the backbone of defense. The nation's highways, over which men and munitions must move, were built by air compressors, shovels, pavers, graders . . . Waukesha Engines not only power all types of machinery that build these roads, but the very transport trucks that traverse them.

Air compressors and hammers build battleships. Oil field drilling and pumping rigs furnish their fuel. Drills and dredges,

pumps and pile drivers deepen their harbors. Contractors' construction machinery brings into being army cantonments, airports, naval bases, and supply depots—and expands vital producing and manufacturing facilities. Generators supply their power and lighting. Much of this machinery is powered by Waukesha Engines.

From field and farm must come the food that feeds both the military and civilian population. And from Waukesha come the motors that power the tractors and other modern farm machinery.

Waukesha will carry on—even as before—and beyond—today's defense efforts.

WAUKESHA MOTOR COMPANY
WAUKESHA, WISCONSIN
NEW YORK TULSA LOS ANGELES

GASOLINE OR GAS—10 HP. TO 350 HP. ★ DIESEL FUEL—30 HP. TO 325 HP.

WAUKESHA ENGINES

CONTINENTAL'S NEW ENGINES

(CONTINUED FROM PAGE 40)

break it will break first at a point where the operation of the engine is not affected and the gasket will not have to be replaced until the manifold is removed for some other reason.

Heat transfer from the exhaust to the intake manifold is accomplished by joining the short center section of

the exhaust manifold to the intake manifold immediately above the riser. Provision has been made for either front or rear exhaust outlet.

Water circulation is effected by a centrifugal type water pump mounted at the front end of the engine and driven from the crankshaft by a "V" belt which also drives the generator mounted on a swing bracket on the left-hand side of the engine.

The water pump shaft is mounted on two ball bearings of the sealed-in type, but means for regular lubrica-

tion are also provided. The water pump seal is of the packingless type with a carbon sealing washer running against the polished face of a stainless steel bushing. This stainless steel face for the carbon sealing washer to run against has been found advisable to prevent rust from scoring the carbon and eventually causing leaks. The fan blades are bolted directly against the front face of the water pump pulley and centered by a pilot turned thereon. A thermostat is provided for in the water outlet elbow. This elbow is made to accommodate a 1 3/4 in. diameter radiator hose.

Re-circulation of water during the warming up period is effected by means of drilled passages in the cylinder and head which connect with a drilled hole in the inlet side of the pump. The pump delivers into a brass distribution tube located just underneath the valve ports. This tube, by means of holes located in the top and side, directs the cooling water where required, mainly at the exhaust valve seats. The cylinder water jacket is full length, extending all the way down to the crankcase proper.

The oil pump is located near the bottom of the oil pan at the center of the engine. It is driven by a gear on the camshaft and runs at camshaft speed. Both the pump gears proper and the drive gears are of the helical type for quiet operation. From the pump the oil is delivered through the hollow shank of the pump body directly to a drilled hole in the crankcase which connects with the general oil distribution system, thus eliminating all tubing.

The oil first goes across the engine to a full-length gallery drilled along the left-hand side of the engine, then across the engine at either end into another full-length gallery drilled through between the cylinders and tappet bores. The reason for doing this is to help in controlling the oil temperature as all of these drilled galleries are located in the bottom of the water jacket. From the latter full-length gallery, the oil is distributed under pressure to the crankshaft and camshaft bearings and from the crankshaft main bearings drilled passages in the crankshaft itself carry oil to the crankpin bearings. The oil pressure is controlled by a spring loaded relief valve located on the camshaft side of the engine. This re-

(TURN TO PAGE 90, PLEASE)

BOTH ON THE HOT \$POT

— ENGINE—HOT PUMPS GET ME DOWN



\$mile Boy!

—YOUR \$URE AND
EAS\$ AN\$WER
IS AUTOPUL\$E

<p>NO MORE VAPOR LOCK</p> <p>Engine-mounted pumps get hot. This and suction-pumping cause vapor lock and you're on the "hot spot" as well as the cam pump.</p>  <p>BUT you mount AUTOPUL\$E in a cool spot. It pushes the fuel stream, solid and vapor-free. Fuel feed troubles disappear. Runs are "on time" again.</p>	<p>NO BOILED-FUEL WASTE</p> <p>Besides vapor-locking, hot camshaft pumps also cause 10% of highest-test fuel-ends to boil off and vent out carburetor.</p>  <p>One tenth your fuel bill total waste. Stop this with Autopulse.</p>
<p>PUSHER NOT \$UCKER</p> <p>Camshaft pumps must mount on hot motor and must pump by suction. They cost plenty for you—in time, money, delays.</p>  <p>AUTOPUL\$E mounts back near gas tank, never gets hot, never heats fuel, and saves money every mile run.</p>	<p>BEGIN \$AVINGS\$ NOW</p> <p>Stop waste today! Why let LO\$\$ continue? Get rid of trouble. Many A-1 operators have done so with AUTOPUL\$E. Have your jobber tell you of our change-over plan, or write direct.</p>

CUT OUT AND MAIL THE COUPON TODAY!



AUTOPUL\$E CORPORATION, Detroit, Mich.

Please send complete information about AUTOPUL\$E PUMPS

Name _____ Street _____

City _____ State _____



LESS "TIME OUT" FOR SERVICE since they put in AC Oil Filters!

The checkers have the story—written down in cold figures. When engines are protected by AC Oil Filters, mileage between ring jobs or cylinder boring goes *up*.

AC or Argo Oil Filters trap grit and sludge before they get a chance to cause trouble. The engine oil is always clean, and *clean oil* can't clog piston rings or aggravate wear. Oil ring slots stay clear longer. Compression stays up. Carbon formation is retarded. Oil and gas economy are maintained.

Call in your AC supplier at once, and find out how little it costs to get this repair-saving, money-

saving, time-saving protection for your fleet. Installation is simple, even if your engines were not oil filter equipped at the factory.

And when you get AC or Argo Filters, you've gotten the finest protection money can buy. Their filtering elements positively cannot channel. Crankcase acid cannot harm them. Yet, they filter so thoroughly that even the discoloration in old oil is removed.

AC Oil Filters Help Keep Equipment Rolling

AC OIL FILTERS are standard or optional equipment on—BUICK, OLDSMOBILE*, and PONTIAC* Motor Cars • GMC Trucks GREYHOUND and FLXIBLE Buses • ALLIS-CHALMERS, EAGLE, GRAVELY, and READY POWER Tractors ATLAS IMPERIAL and GM DIESELS • CONTINENTAL and GRAY MARINE MOTORS • MARION SHOVELS KOEHRING ROAD MACHINERY • BROWN and SHARPE MACHINERY,—these are some of the vehicles, power plants, and machines on which AC Oil Filters are used for equipment.

*Optional

MONEY CAN'T BUY BETTER FILTER PROTECTION THAN AC

(CONTINUED FROM PAGE 86)

lief valve is of the cylindrical plunger type working in a removable sleeve which can be replaced if worn over-size in the bore. Inlet and return connections are provided for several types of partial flow oil filters on the left-hand side of the engine.

The distributor mounting is standard S.A.E. type "B" and is located on the top of the cylinder head at the center of the engine. The distributor drive is simply an extension of the oil pump drive coming up through

the cylinder block and cylinder head. Spark plugs are 18 m.m. and dual ignition can be provided for when required.

For a starting motor provision is made for a standard 11-tooth pinion, the motor to be mounted on a No. 1 S.A.E. flange on either side of the engine.

For mounting the engine, the front end is supplied with either a trunnion located immediately behind the crankshaft pulley or with two short feet located behind and on either side of

the pulley. At the rear end, the suspension is the conventional type of flywheel housing with or without arms.

The weight of the standard engine without accessories is 860 lb.

END

(Please resume your reading on P. 42)

Caterpillar Introduces Heat-treated Liners

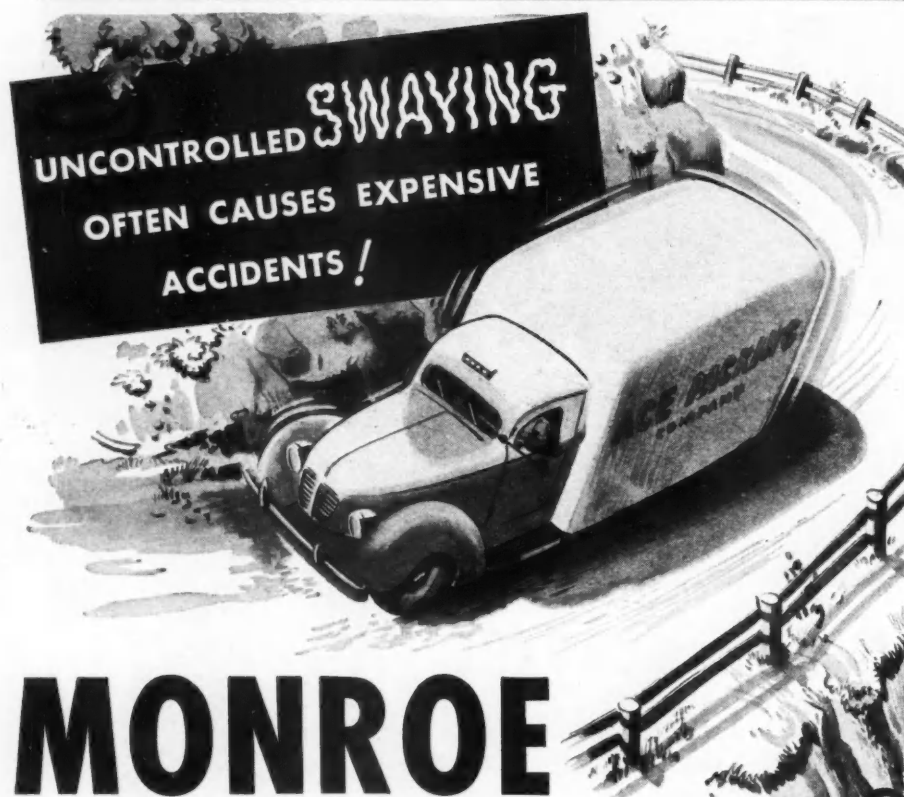
APPPLICATION of induction heat treatment to the bores of cast iron cylinder liners used in its entire line of diesel tractors has been announced by Caterpillar Tractor. This application of electro-magnetic heating to the cylinder bores of internal combustion engines is an adaptation of the process developed by Budd Induction Heating, Inc.

The treatment produces an I.D. surface of controlled hardness, depth from the surface, and area in the bore of the liner, resulting in a longer-wearing sleeve with markedly improved physical properties, it is claimed.

In this installation, to which Caterpillar has applied the trade name "Hi-Electro," the heat treating machine hardens the inside diameters of the cast iron liners to a surface hardness of Rockwell "C" 52-55, which is subsequently tempered to a slightly lower hardness. Depth of the hardened area developed is approximately 0.070 in. Liners from 10 to 15 in. in length, with bores varying from 3¾ to 5¾ in. I.D., in production. Following the operation of hardening and tempering, the bores are honed to the final finish, before "Surfiding" after which the O.D. is finish-turned for insertion into the cylinder blocks.

The finished sleeve is reported to be superior in physicals and wear-resistance to any which have been previously produced. While the bores are extremely hard, providing maximum resistance to wear, the sleeves are not brittle.

An interesting feature of this method of heat treatment is the fact that the hardening operation serves as an additional check on previous inspections of the units treated, as the treatment serves to emphasize any porosity or imperfections which may have escaped visual and surface examinations.



MONROE

HEAVY-DUTY SHOCK ABSORBERS

There is no job too tough for Monroes: down through the years they have proved that they can take it, and control the heaviest loads. (That's why the railroads use them—and no other.)

Monroes have led in engineering advancements, and in their manufacture the most skilled mechanics are always alert to attain perfection.

Monroes are fully guaranteed. Our engineers will gladly help to work out your problems. Sizes: 1 inch...up to one ton—2 inch...up to five tons—3 inch...above five tons.

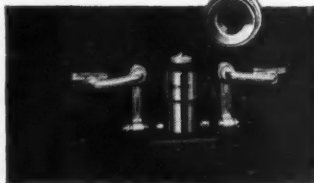
MONROE AUTO EQUIPMENT COMPANY

MONROE, MICHIGAN

THE RAILROADS PREFER MONROES!

Many railroads are using Monroe Direct Action Shock Absorbers on their new trains.

Monroes are the only Airplane-Type Shock Absorbers approved and used by railroads to control the springs on high-speed trains. Monroes withstand the toughest service.



SAVE MONEY
 ON SANDING JOBS ... do cleaner, better work in
 less time ... with less expense for discs ... by using
SIOUX PHENOL ABRASIVE DISCS

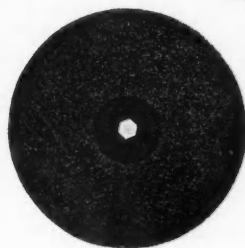


They stand up under the terrific friction heat of punishing work — without loading, glazing or softening! They cut COOL, clean and fast. Although FLEXIBLE, they're tough and long-lasting — whether used for grinding welds, removing old paint or smoothing fenders SIOUX Discs are the most ECONOMIC kind to use.

An amazing heat-insulating resin bond, combined with tempered aluminum oxide grain and a moisture-proof phenolic fibre backing give SIOUX Abrasive Discs these remarkable qualities.

For bigger profits, use SIOUX Abrasive Discs with SIOUX High Speed Sanders, SIOUX Disc Pads and Disc Holders.

ASK YOUR JOBBER'S SALESMAN



SIOUX
 phenol abrasive
DISCS

STANDARD THE
 ALBERTSON & CO., INC.



WORLD OVER
 SIOUX CITY, IOWA, U. S. A.

GETTING A LINE ON BRAKE LINING

(CONTINUED FROM PAGE 23)

tion. Not all woven linings are suitable for severe service.

On the side of molded lining some of the experts have this to say: It can be ground to much more accurate dimensions, permitting much closer tolerances and it handles heat better than the old flexible woven lining. This is not true of the newer rigid

block type of woven lining. Most experts agree that there is no clean line of demarcation between the two types if both types are well made.

About the numerous kinds and types of brake lining that sometimes confuse the fleet operator in selecting the correct brake lining for a specific purpose, there seems to exist a sharp difference of opinion. Some manufacturers' representatives hold that there is a definite, specific purpose for every type of brake lining offered for sale. Others feel that some of the

types could be eliminated if their customers would keep up-to-date on brake lining lore.

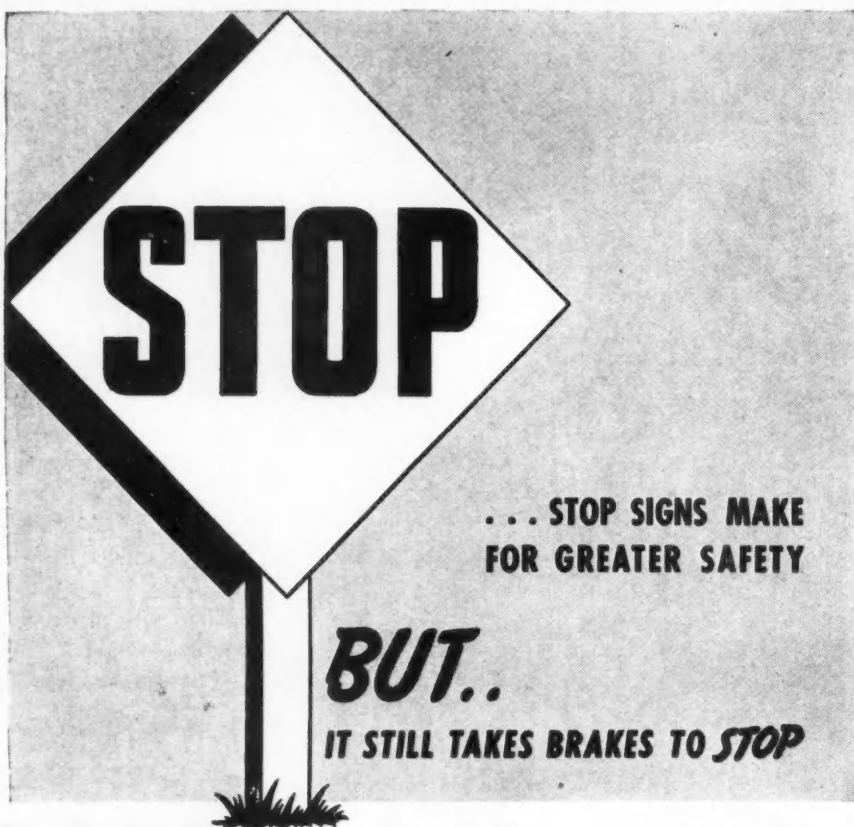
Explanation of this latter viewpoint is that a fleet will try a certain type of lining on a certain type of vehicle in a certain type of service and find it satisfactory. The fleet then proceeds to freeze on to that selection despite the fact that the lining may become superseded by a newer type of lining that has all of the desirable characteristics of the old type of lining plus some more of its own.

Regardless of the reason there are many types of brake lining. Brake lining manufacturers have done as much as they can to prevent confusion in the use of the different types. Some have offered manuals giving specific recommendations for specific purposes in such a manner as to leave no room for error in normal operation. In some cases the manuals have been supplemented by uniform questionnaires which, if sent to the manufacturer, will bring a recommendation even for special installations. This is, of course, in addition to the field force which personally supervises installations that give trouble or some indication of requiring special attention.

There is a unanimous invitation offered by brake lining manufacturers to the user of brake lining to get in touch with them if he is in trouble. Perhaps invitation is not the correct word. Most brake lining manufacturers urge fleet operators to take their brake lining troubles to headquarters where they can be handled by experts.

If a phenomenal stop without much regard to brake lining life or phenomenal life without much regard to stopping ability was all that was required the manufacture of brake lining would be simple. However, fleet operators as well as all other brake

(TURN TO PAGE 94, PLEASE)



All the millions of dollars wisely spent to make our streets and highways safer can do only part of the job. There still is no substitute for brakes.

By equipping your trucks with Ferodo Brake Linings you can profit by the greater speed and safety engineered into the highways.

Ferodo Brake Linings are made to suit the requirements of various braking systems. They will not fade. Their sure, smooth braking action and long wear insure lasting, low-cost safety. Write for full details.

Ferodo for Road Safety



FERODO AND ASBESTOS, INCORPORATED, NEW BRUNSWICK, N. J.



Rare in the fruit and produce field is a truck as handsome as this 4-ton (payload) Mack Model EE operated by Albano Bros. of Jackson Heights, N. Y.

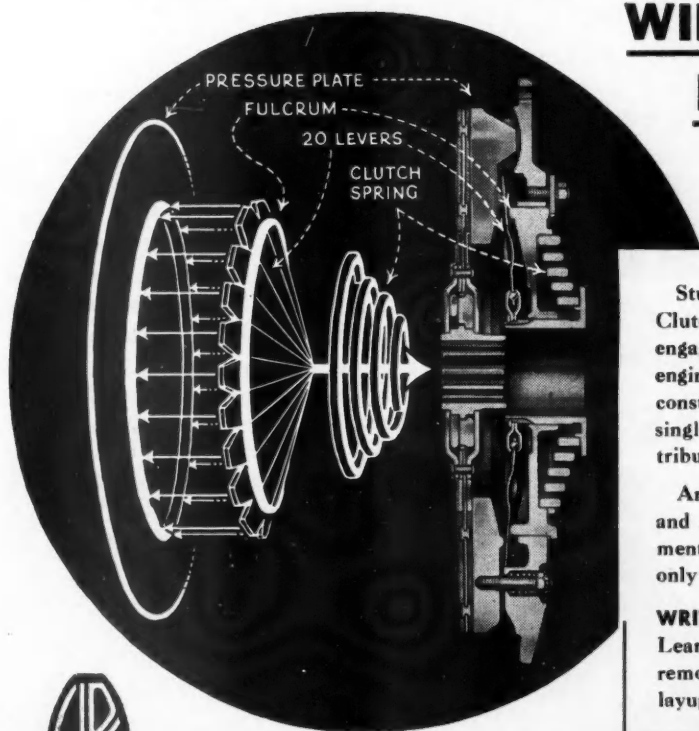


LIPE HEAVY-DUTY CLUTCHES

**WILL
NOT
GRAB**

Engineers know that constant repetition of small shocks will cause the toughest steel to fail. That's why a grabby clutch—with its day-in, day-out shiver, grab and bang—is so costly and destructive.

For sooner or later grabby clutches cause drive-line failure, or stripped gears, or crystallized axles, or misaligned differentials . . . to say nothing of the wear and tear on the clutch itself, and the eventual burning out of the facings.



Study the diagram shown here. See how Lipe Heavy-Duty Clutches are engineered to give you smooth, positive, no-damage engagements . . . with no shock or excessive stress on the engine, transmission, drive-line and rear-end. See the patented construction that keeps the pressure surfaces parallel . . . the single spring and the equally-spaced pressure fingers that distribute the pressure evenly around the plate.

And Lipe design gives you this further insurance against wear and adjustment—a push-out type of release that preserves alignment because the throw-out bearing is in contact and working only when the clutch pedal is in release position.

WRITE today for a free copy of the latest *Lipe Service Manual*. Learn how Lipe clutches can be adjusted for wear merely by removing a shim. No special tools required. No excessive layups for drive-line repairs or clutch relining.



W.C. LIPE, INC. Syracuse, N.Y.

(CONTINUED FROM PAGE 92)

lining users want long life and good performance, which leads to the compromise inevitable in all engineering. The manufacturers do all they can and spend a great deal of money finding out how to give both in the best proportions possible. The experience of their field operators points out that most fleet operators do not do as much as they can to gain the same end.

Specifically they point to bad maintenance as the chief underlying cause

of most of the brake lining trouble with which they come in contact. It is the belief of those best informed that too much attention is given to brake lining selection in the hope that it will painlessly overcome too little attention to brake maintenance. Manufacturers brush off the idea of tricks or short cuts in brake maintenance by saying that there are none and that the care of brakes is a simple enough process to be learned by anyone who really wants to do it. They agree that most shops should begin by

cleaning up themselves and the vehicles to improve the quality of brake maintenance. Our experts are inclined to think that a thorough standard procedure like the one advocated by the National Safety Council would improve brake maintenance if followed.

If there is one phase of the actual brake maintenance process that escapes the fleet operator more often than others with unhappy results, it seems to be the failure to make brake lining fit the drum. This can be done by re-arc-ing shoes to their original shape with equipment designed for that purpose by grinding the lining to fit or shimming it. Particular attention must be paid to the use of the correct oversize lining to match the amount of material removed from the drum with either method.

One expert was prepared to say on the basis of his experience that fleet operators would lose 65 per cent of lining life if, when replacing brake lining, they turned the drum but failed to install oversize brake lining fitted to the turned drum.

There was another word of caution that kept coming up. It was a warning against removing too much metal from brake drums by too many turnings. When too much metal has been removed, the drum will distort under pressure and it will fail to carry off enough heat to properly cool the brake. Incidentally, with the disappearance of pressed steel brake drums, brake lining manufacturers feel that one complication has been removed. If a brake lining works satisfactorily on one drum now, the drum can be replaced by a drum of a different make without considering a change in lining type. Any good lining that is satisfactory with any good drum will be satisfactory with any other good drum.

Squeaking, the brake lining manufacturers contend, as they always have, is not the fault of the brake lining. The chief reasons for it are improper contact of lining to drum, which may be caused by failure to grind the lining or re-arc bent or distorted brake shoes or faulty adjustment. Other causes are improperly designed brakes or looseness in the brake rigging that permits a vibration to be set up. In addition the experts find that many fleets are using ordinary chassis grease on cams,

(TURN TO PAGE 96, PLEASE)

Safety Pays
...THAT'S WHY HAYES TRUCKS
ARE 100% EQUIPPED,

Says-
ALVA CARNELL, Driver for
HAYES FREIGHT LINES, Inc.
of Mattoon, Ill.



This company has used American Safety Tanks since 1937, eliminating the seemingly unexplained fires they had in the past.

AMERICAN SAFETY TANKS DO PREVENT TRUCK FIRES!

U. S. Patent 2090197

Specify them on your NEW trucks—pay for them with insurance SAVINGS. Write for proof.

American Safety Tank Co.

Underwriters Laboratories, Inc., A. U. 1302
KANSAS CITY, MISSOURI, U. S. A.

ROAD-PROVED BY MEN WHO USE THEM



HOW THE DEFENSE PROGRAM TIPPED ME OFF TO SOMETHING GOOD

1 I never thought the Defense Program would show me a new angle for the shop like it did. I lost several mechanics, got short handed at a time when I had more work than ever before.



2 Between the Army and Navy and rush-production factories, trained men weren't to be had. I got desperate and took on some guys that didn't know too much about the work we do.



3 Then I heard about American Brakeblok's Brake Lining Advisory Service. It sounded like help to me; we sent in their form about all our units, our brake equipment, routes we travel.



4 They came back with recommendations that end experimenting, save time, make it easier for new men to do real brake jobs. If you're Defense hit, write American Brakeblok.

AMERICAN BRAKEBLOK DIVISION OF THE AMERICAN BRAKE SHOE & FOUNDRY COMPANY, DETROIT, MICHIGAN

**THREE
HEAVY-DUTY
TYPES**

Each Best for Its Own Job

Master stocks in 38 NAPA Warehouses. Jobbers everywhere give prompt service.

(CONTINUED FROM PAGE 94)
 rollers, anchor pins and cam shafts. This grease thins out and runs under high temperatures, usually getting on the brake lining where among other things it causes the brake to squeak.

Brake drum checks, the present scourge of brake maintenance, to hear some fleet operators tell it, are caused by alternate heating and cooling of the drums. To eliminate it, is one of the reasons for using two types of brake lining in one drum. When one shoe is energized and one

is not, the energized shoe does most of the work if one type of lining is used. The temperature differential may be as high as 500 deg. By varying the type of lining, it is possible to equalize the amount of work done by the shoes and also the temperature. Some manufacturers, while they agree that different linings equalize the work done by shoes, do not subscribe to the temperature differential in a fast turning drum.

The checks start as hair line cracks. Some brake lining is designed to

wear the brake drum faster than the cracks progress and in that way keep them from ruining the drum. But these are relatively fine points. One of the major attacks on drum checking has to come by making sure that brakes are equalized and not some of the drums doing all of the work and consequently overheating.

The practice of cementing brake lining to the shoes instead of bolting or riveting it is not widespread enough to make it possible to gather any information. The brake lining boys are cautious and without experience it was impossible to get them to express an opinion. It is, however, a process that will be keenly followed by all of them.

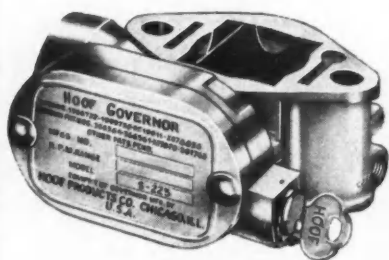
A new instrument has joined the pyrometer and thermocouple in brake maintenance work. This one is for hydraulic brakes. It is essentially a compression gage, with fittings for the bleeder port. With the pedal depressed it shows if the pressure is correct at each wheel. When the pedal is released, the gage shows if the pressure permits the brake to release and also if the hydraulic system maintains the normal 7 to 10 lb. pressure. Thus the gage will show brake effort, restricted lines, leaks in the system, and the correct function of the master cylinder, the heart of the hydraulic control system.

Brake lining has been improving at a tremendous rate. The improvement has been in providing longer life and better stops. The brake lining people feel that they have not had full recognition of their achievements because trucks have been getting faster, loads greater and brakes smaller, thus giving the lining a much more severe job. They expect to continue the improvement without any radical departures from present product.

END

(Please resume your reading on P. 24)

HOW WOULD YOU LIKE TO SAVE 13.5% IN GASOLINE



Hoof Key Type Governor furnished, if desired, with special lock number for your fleet.

Hoof Governors also available in Seal and Dash Control Models.

Do you know about the Hoof Vacuum Metering Control for even greater gas economy... on governed Chevrolets?

Make quite a difference in your operating cost over a year's period... wouldn't it!

Fleet owners in every line of business are getting these big savings with governors—and yet, it represents only one of eleven economies made possible through controlled speed. It is an unquestionable fact that controlled speed, by eliminating excessive speeds, in first, second and high gear, promotes gas economy and every phase of operating and maintenance economy.

The Hoof Governor will permit your vehicles to perform their normal duties, without interfering with schedules, and reduce to an amazing degree, operating expenses which you have considered fixed costs.

That the Hoof Governor will serve you best is our promise. Try it... see for yourself.

SEND FOR NEW GOVERNOR MANUAL F-341

HOOF PRODUCTS CO., . . . 6543 S. Laramie Ave., CHICAGO, ILL.

Makers of the FAMOUS HOOF CANTILEVER GOVERNORS.



Smart eye appeal plus unusual load capacity for its size are claimed for this new Diamond T carrying 7 Up for the Portland (Ore.) Bottling Co.



Sensational New

LINCOLN

LUBRICATING EQUIPMENT

*enables fleet operators to lubricate trucks
quicker, better and more
economically*

New LINCOLN LUBREEL and WALL BATTERY will prove to be one of the best investments you can make in your shop

Hundreds of fleet owners are cutting lubrication service costs with Lincoln equipment—because it is designed for just that purpose.

Regardless of whether your fleet is large or small, you'll find the Lincoln line includes the equipment you should have to lubricate your trucks quickly, efficiently and economically.

For example, consider the Lincoln Lubreel and the Lincoln Wall Battery shown above. The Lubreel

groups all delivery hose—chassis, gear lubricant, motor oil, air and water—at the most convenient central point. Each hose is automatically reeled in, out of the way when not in use.

The Compartment-Type Wall Battery (shown in background) consists of a large lubricant cabinet with units for dispensing chassis and two types of gear lubricants from original 100 lb. refinery drums. On each side is a roomy utility cabinet.

For details on the above units, and other equipment in complete line, consult your nearest Lincoln jobber, or write us.



LINCOLN ENGINEERING COMPANY

Pioneer Builders of Engineered Lubricating Equipment

ST. LOUIS, MO., U. S. A.

DO YOU WANT GAS & OIL ECONOMY?

(CONTINUED FROM PAGE 21)

example of this kind of operation would be the milk trucks, which do a great deal of idling with very little power running, and but few miles per day. Duplication of milk truck schedule on the test stand would give half a crankcase full of oil and sludge in a week, and the engine ready for overhaul in about 1200 miles. There is

no question but what the engine and vehicles having these trying schedules must be equipped with devices for keeping up the temperature. Radiator shutters and in extreme cases even additional protection for the crankcase to avoid overcooling are highly desirable. It appears that 170 to 180 deg. would be a safe optimum crankcase temperature.

We should like to see a very much greater introduction of oil coolers into the engines in the next few years. Some few commercial and passenger

cars have used heat interchangers for the oil in the radiator circuit. This does very well for winter, but as a rule will not hold the crankcase temperature low enough in hot weather. With 180 to 190 deg. water, the oil cannot be cooled much below 240 deg. at full load, and this is not cool enough to get best results.

Probably radiator cooling will be needed, perhaps in series with a heat interchanger for summer use, and bypassed in winter; or thermostat control as for the regular radiator.

Octane Logic

It is fairly well recognized that there is no appreciable difference in power or economy for any standard motor or premium gasoline when used in an engine designed for motor grade octane number, provided the ignition and carburetor are adjusted to suit the gas that is being used. In general, the less volatile the gas and the higher the specific gravity, the higher the combustion heat available per pound. This is offset by the condition that, as the specific gravity goes up, the volatility is less, and a little less of the gas is converted into vapor in a condition suitable to burn in the engine so that, in the range of the gases on the market, the B.t.u. actually released in the engine differs very little. From this it might be reasoned that the third grade gasoline might be just as good for engines with low compression ratio as the standard motor and premium grades. This might easily be true except for the fact that, since most of the third-grade gasolines are made from what is left after the standard motor and premium grades are manufactured, the performance of these gasolines is often not quite as good. I am not referring here to the bootleg and unstandardized third-grade gasolines because some of these are very bad. We do find by test that due to the restrictions on the materials available for manufacture, the third-grade gasolines do not allow as much range either side of best mixture as the motor and premium grades. It is, of course, a manufacturing necessity that the best gasolines used for leaded mixtures must be made up as high a natural octane rating as the stocks and methods of refinement will allow. Therefore,

(TURN TO PAGE 100, PLEASE)

AT-TEN-SHUN!

STOP FITTING TROUBLES AND FUEL LINE DIFFICULTIES

WITH

WEATHERHEAD

Fittings & Flexible Hose

YOUR jobber has both—Weatherhead original equipment replacement fittings as well as Weatherhead fuel lines in coils or ready-to-install lines with fittings attached.

To play safe when replacements are necessary—just specify Weatherhead.

THE WEATHERHEAD CO.
300 E. 131st St. Cleveland, Ohio

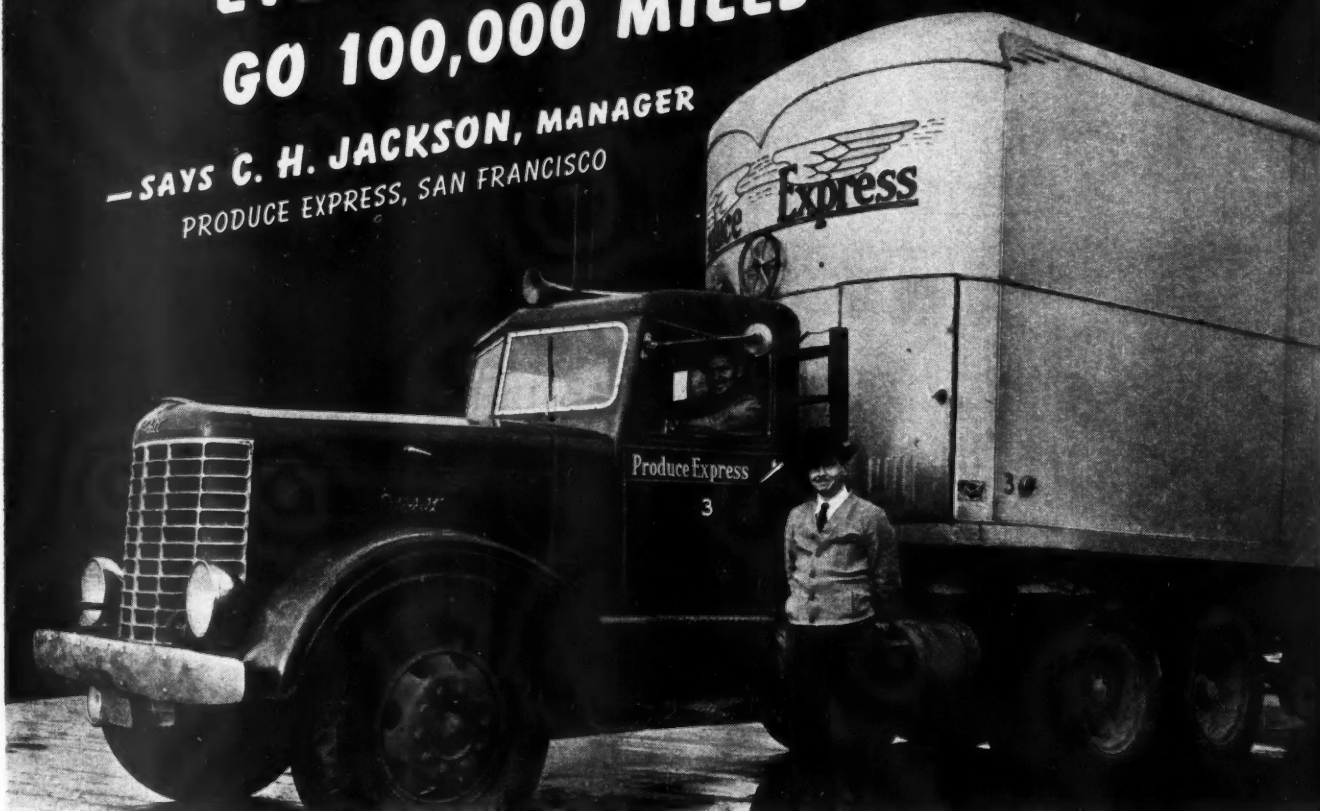
WEATHERHEAD

FITTINGS • FUEL LINES • BRAKE PARTS • HYDROMETERS • DASH CONTROLS



**BELIEVE IT OR NOT!—
"INSTEAD OF OVERHAULS
EVERY 60,000 MILES WE NOW
GO 100,000 MILES"**

**—SAYS C. H. JACKSON, MANAGER
PRODUCE EXPRESS, SAN FRANCISCO**



They've got to keep rolling on this fast 13-hour refrigerator run between San Francisco and Los Angeles. Cutting down motor overhauls means precious profit when you haul precious perishables. "That's why we're so pleased with Ring-Free," says Mr. Jackson. "Our carbon and sludge problems have been eliminated. Instead of overhauling

every 60,000 miles we now go 100,000 miles and more." See for yourself how this amazing motor oil actually removes carbon, cleans the motor, cuts down motor wear and repair... in both gasoline and diesel engines. Call the Macmillan Man for proof... or write us direct.

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Believe It or Not! by *Ripley*
REG. U. S. PAT. OFF.

THE 1-2-3 OF RING-FREE

HERE'S WHAT HAPPENS:

1- IT MAKES YOUR **MOTOR**
RUN SMOOTHER

2- IT GIVES YOU **MORE MILES**
PER GALLON OF GASOLINE

3- IT **SAVES WEAR** AND REPAIR

P.S.— AND IT'S 100% PURE OIL!

HERE'S WHY:

1- IT **REMOVES CARBON**

2- IT **CLEANS THE MOTOR**

3- IT **REDUCES FRICTION**

FAST BY
THOROUGH LUBRICATION!

— as drawn by Ripley in Life, Collier's, Time

**MACMILLAN
RING-FREE
MOTOR OIL**

* Reg. U. S. Pat. Off.

Copyright 1941 by
Macmillan Petroleum Corporation

(CONTINUED FROM PAGE 98)
since the bulk of the material goes into the standard motor and premium grades, the material left for third-grade gasoline is, in general, apt to be of lower octane rating. Moreover, since it is more or less remainder material, control of the volatility curves is not as easy to obtain.

Oil Selection

In the space available, it is impossible to cover this field of oil economy even reasonably fully. It is our

feeling that the use of very light lubricants can be overdone. We have found signs that breaking-in an engine on S.A.E. 10 oil will offer plenty of chance for scuffing. It is also true that in practically all cases the lighter the oil the less stable, and deterioration in the crankcase is therefore harder to control. So far as engine friction and its effect on gasoline economy are concerned, there is relatively little more friction with the heavier oils than with the lighter oils in the case of actual experiments in

fleets, it cannot be detected.

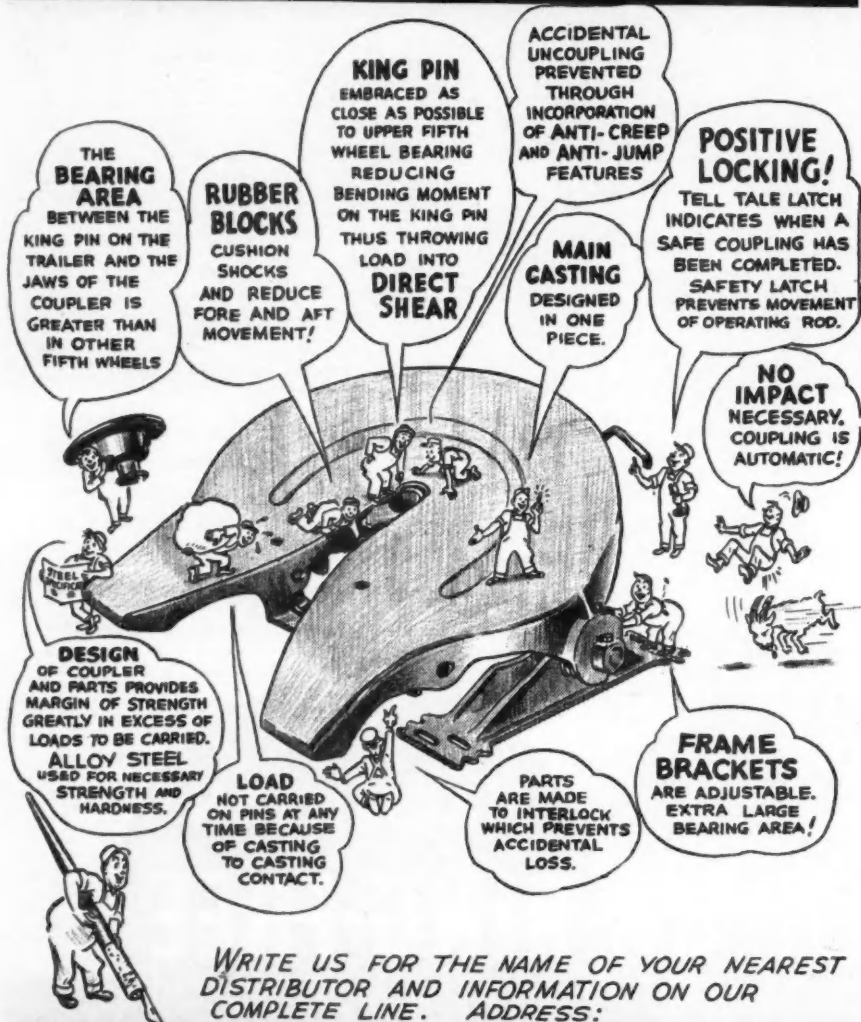
Study of the theory of bearings indicates quite plainly that the best thing for bearings would be to provide a lubricant, the viscosity of which did not vary with temperature, but such a material never has been available and is not likely to be. A little consideration will show that since we must have considerable temperature variation in the engine between start and operating temperature, particularly in winter, there should be as little change between the cold starting viscosity and the running viscosity as possible, and that therefore high viscosity index oils are desirable. If we could conveniently separate the cooling function from the oil as distinct from the lubricating function, this problem would disappear. It should be obvious to everybody that when a low viscosity index oil is used in winter-time, its choice is mostly determined by the cold start viscosity, whereas at the running temperature it may be thinned out perhaps to kerosene viscosity. Other things being equal, the load-carrying capacity of a bearing is almost directly a function of viscosity. In the imperfect film region of lubrication which occurs at the ends of the stroke on the piston and rings and in starting up or stopping on the bearings, oiliness additives have some slight value, but unfortunately they have not enough value to replace the need for suitable viscosities under these conditions. As the bearings open up with wear, obviously heavier oils may be satisfactorily used. The main thing is to see that each bearing gets at least as much flow as for the thin oil for which it may have been designed.

Wear on the bearing causes a change, on the one hand, of oil flow, which tends to increase with the same viscosity oil, and on the other hand, of load-carrying capacity which is lowered as the clearance opens up, if the viscosity remains the same. I think most of us would be ready to recognize that a great deal of the bearing and cylinder troubles in present-day engines do not originate so much with the oil as with the design, and we shall be forced to recognize very definitely in the next few years that prescription oils are not the sole answer to an incompletely

(TURN TO PAGE 102, PLEASE)

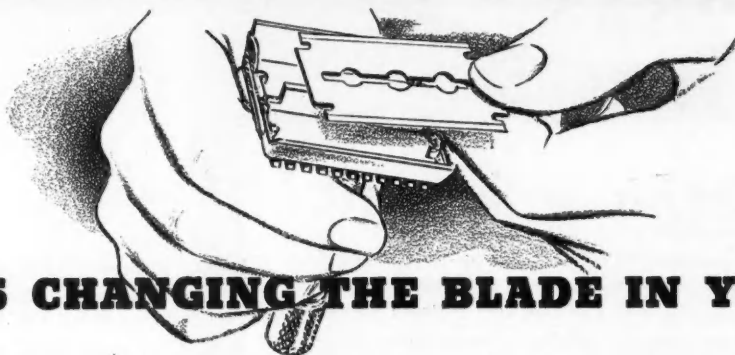
OUTSTANDING FEATURES of the

A-S-F FIFTH WHEEL



AMERICAN STEEL FOUNDRIES

East Chicago, Indiana



AS EASY AS CHANGING THE BLADE IN YOUR RAZOR

You know, of course, how important it is to keep motor oil free from abrasive impurities. But you don't know how easy it is to get certain protection — unless your units are equipped with replaceable-element Purolators!

Watch the oil on the dip-stick. When it shows dirty, replace with a genuine Purolator element. The cost is small—\$1 and up. And — Purolator elements last longer because they hold more dirt!

Insist on Purolator — standard equipment on the large majority of filter-equipped engines — both gasoline and Diesel.

KEEP IT CLEAN
with
PUROLATOR

PUROLATOR PRODUCTS, INC., NEWARK, NEW JERSEY ☆ ☆ FOUNDER AND LEADER OF THE OIL FILTER INDUSTRY

(CONTINUED FROM PAGE 100)
worked out design. There is no doubt that various addition agents will be more and more used in the future, but we do feel that properly refined straight oils will do most of the jobs, when the oiling system and bearings are right.

From the practical operator's point of view it would seem there is too much effort being made to dry up engines. Oil actually costs less money than finished surfaces do, and much of the oil loss doesn't occur past the

pistons, but through the crankcase breathers.

Another argument for the higher grade oils besides higher viscosity index, which usually accompanies better refining, is increased stability and consequently less sludge and tendency toward corrosion of the newer bearing materials.

It is rather difficult to indicate the path for economy in lubrication, because the actual design and the type of service can alter the behavior so enormously. For example, a diesel

engine operating in construction work is required to run for the operating season. The owner does not object to replacing pistons, rings and cylinder sleeves at the end of the season. Frequent oil changes and high detergency are here indicated. But the operator of a moderate speed diesel engine running a generator, will not enjoy changing oil every second or third day and would strenuously object to the expense of a complete cylinder unit replacement every four to six months. He needs high stability, low wear rates and possibly mild detergency. He will be better off if he can keep copper-lead and cadmium-silver bearings out of his engine; nobody has seen a corroded tin-babbitt bearing.

Most of the present troubles with heavy-duty engines center around copper-lead bearing corrosion and valves. The main design causes for bearing troubles: too high crankcase temperature, too little actual flow over the bearing surfaces, too little ventilation. Other causes: unit loads too high, clearance too small. Operation causes: oil change too infrequent, roughened bearings from line reaming, too close refitting, oil filters not changed enough, cold operation in winter.

Remembering that all oils are organic and break down at about 650 F., that serious deterioration is apt to begin at about 225 F., and that rate of oxidation doubles for each 20 deg., the importance of crankcase and bearing temperature, likewise valve and stem temperature, is at once apparent. We all know of crankcase temperatures up to 275 deg. and some cases of bearing temperatures up to 380 deg. Corrosion of copper-lead or cadmium-silver is almost certain, and babbitt so much softened as to head toward fatigue failure.

Very often the trouble with valves is located at a hot guide that cracks the oil and forms deposits. Usually the cure is to shorten the uncooled projection of the bushing and increase the oil flow a little. Some of the connecting rod bearings are getting too little oil flow. The annular groove gives the highest flow, but may throw too much into cylinders or overload the oil pump. In this case, opening up clearance slightly will help, as flow is about proportionate to the square of the clearance. (TURN TO PAGE 104, PLEASE)



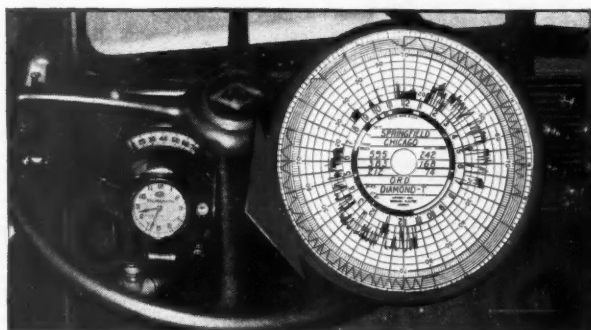
***Red Seal* is on the march**

The history of Continental "Red Seal" Engines is concerned with herculean tasks performed on behalf of industry and the nation's progress. It was Continental's reliable power that helped the auto industry attain its magnitude. More recently this same reliability has been powering the nation's light aircraft into maturity. As should be expected, Continental's famous "Red Seal" is part and parcel of the country's huge defense program. It is, however, but a phase in Continental's onward march. Today, more than ever before, Continental dependable power is reaching out into more and more fields, is being put to work on the many jobs America has to do — on the farms, on the roads, in the oil fields, and in industry at large. The finest of manufacturing facilities, manned by an expert and loyal personnel, directed by an alert management, and stimulated by mounting orders, are assurances that Continental is on the march as never before.

Continental Motors Corporation
MUSKEGON, MICHIGAN

TACHOGRAPH CHARTS

bring SAVINGS and SAFETY



• Sensational recording speedometer provides automatic graphic log of speed of truck. Also charts starts, stops and time out

Charts produced by Sangamo Tachographs enable you to sit at your desk and *know* how efficiently each of your trucks is being handled.

At the start of each day a new chart is placed inside the Tachograph. The Tachograph replaces the conventional speedometer on a truck. At the end of the day the chart is removed, and you have a graphic record showing time the truck engine was started, distance and speed traveled, as well as all stops and length of stops.

This accurate information prompts safer and more economical driving, indicates any speeding or wasted time, and produces indisputable evidence in case of an accident. This data is a definite boost for the good driver, and a guide for helping less efficient drivers improve so as to effect savings and safety.

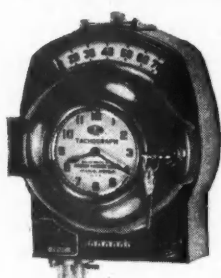


Illustration above shows Tachograph which replaces original speedometer on truck. Speedometer, clock and warning light are visible for the driver's convenience. The Tachograph chart is locked inside the instrument.

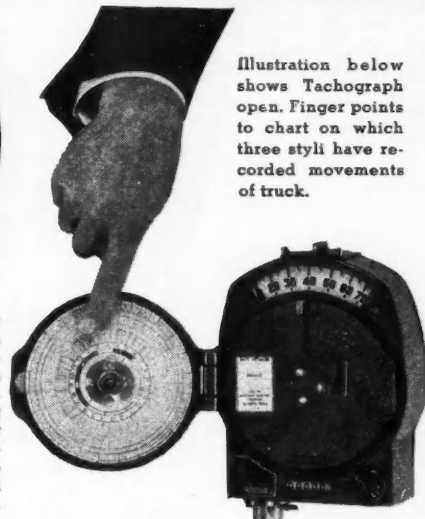


Illustration below shows Tachograph open. Finger points to chart on which three styli have recorded movements of truck.

MODEL "A" RECORDS SPEED IN MILES PER HOUR MODEL "B" RECORDS SPEED IN REV. PER MINUTE

Two Tachograph models serve all applications. Model A records the speeds of the vehicle in miles per hour. Model B is recommended where the speed of the engine, rather than the speed of the vehicle, is the important factor.

Act today. Get complete information on this recording speedometer manufactured by Sangamo Electric Company, and distributed exclusively by the Wagner Electric Corporation.



Clip and Mail Coupon for Details

AUTOMOTIVE PARTS DIVISION
Wagner Electric Corporation

6470 Plymouth Avenue, St. Louis, Mo., U. S. A.

☐ Please send a copy of "Savings and Safety."
☐ Have your nearest branch call on us regarding the Tachograph.

Name and Position.....

Company.....

Address.....

We operate.....trucks.

(CONTINUED FROM PAGE 102)
tional to cube of clearance.

Cadmium-silver only seems to give trouble from oil-acid corrosion. If the crankcase temperature can be lowered by opening up air flow in the crankcase or using a cooler, this situation can be improved. If not, an inhibited oil is indicated.

Copper-lead is giving most of the trouble now and develops new diseases from time to time. Lowering crankcase temperature when possible and changing bearing grooving, will

usually eliminate most of the hot-corrosion trouble.

But we have so many cases of quick failure, say 10,000 miles, after overhaul and particularly after line reaming, that another cause must be sought.

We find too many cases where repair shops fit copper-lead renewal shells as tight as babbitt. This is very bad, as copper-lead is unyielding and has more expansion than babbitt. With close fits lead may be sweated out during break-in, and the bearing

is sure to go quickly. We have proved this by test. The amount of crush should be carefully watched as the manufacturing tolerances do not seem to be close enough. Excessive crush will result in a pinched bearing and possible lead sweating.


Line reaming, in our opinion, is better avoided. If the engine ran out-of-line (relaxation of casting strains) for 40,000 or 50,000 miles, the bearings couldn't have been suffering much. The bearings are furnished by the manufacturer with a fine finish, 2 to 3 microns roughness. After line reaming we find plenty of cases where the roughness is 200 microns (a bad bearing) and never less than 40 or 50 microns. If an indium coating has been applied for protection from corrosion, the line reaming completely removes it.

Cold corrosion of copper-lead has been troublesome lately. We do not yet know the whole answer, but it appears that where much cool idling occurs, or cold operation in winter, the deterioration of the oil first attacks the lead in the usual way. Then sulphur from the fuel, coupled with water vapor from condensation, attacks the copper. The corrosion material found in the bearings under these circumstances is mainly copper sulphide.

Another thing that, surprisingly, gives rise to trouble is excessive cleaning at overhaul. In a clean engine the metal surfaces are clean and ready for chemical attack, and the new surfaces of cylinder, piston and rings bring down quite a little colloidal size metal particles as they wear in. This condition obviously gives rise to rapid deterioration of oil during the break-in period. The only parts that benefit by chemical cleaning are those that move on each other.

Choice and use of oil is a tough question to answer. So many factors enter from the mechanical side (design, maintenance and operation) that the variations between different oils are masked or reversed. We are sure, although many designers are not, that with a cool crankcase and high enough bearing flow to keep bearings not over 50 deg. hotter, any good, straight mineral oil and babbitt would generally be satisfactory. This has been already proved in some
(TURN TO PAGE 106, PLEASE)

The Easy Way to Get Better Brakes at Lowest Cost



GATKE FLEET SURVEY

NAME AND CAPACITY OF PARTY IN CHARGE OF FLEET

NAME OF GATKE JOBBER

JOBBER LICENSE

ONE COPY OF THIS SURVEY FOR DISTRIBUTION. ONE COPY FOR GATKE ENGINEERING SERVICE, CHICAGO.

MATERIALS RECOMMENDED ARE OF GATKE MANUFACTURE.		REAR		FRONT		BRAKE DRUM		BRAKE SHOE		BRAKE LINER		BRAKE SET SCREW		BRAKE TENSIONER	
Make	Model	Year	Capacity	Make	Model	Year	Capacity	Make	Model	Year	Capacity	Make	Model	Year	Capacity

GATKE
BRAKE BLOCKS
and Liners

are Genuine CUSTOM-BILT
for each make, year and
model of Truck, Tractor,
Trailer, Bus, Taxicab and
Passenger Car.

27th Year



BRAKE BLOCKS & LINERS

GATKE CORPORATION 228 N. La Salle St., CHICAGO, ILL.

Introduced Moulded Brake Blocks for Automotive Service

When you have GATKE Brake Blocks CUSTOM-BILT for the job, you have everything brake lining can give—

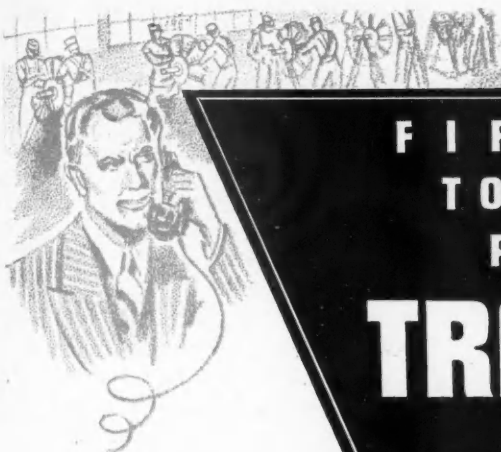
Correct balance between primary and secondary shoes for Maximum Power and Smooth, Quiet Stopping.

Constant holding power at all operating temperatures—no loss of efficiency on steep grades or in prolonged use.

Long wear life for better mileage with fewer adjustments.

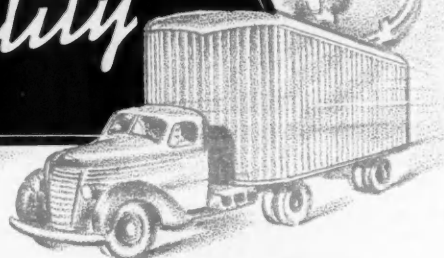
For years the GATKE Brake Survey System has brought to fleets the many advantages of GATKE Genuine CUSTOM-BILT performance. You'll be agreeably surprised at the time and money saved.

Ask your GATKE Jobber or write us for details.



"If that material isn't here at seven tomorrow, we'll have to shut down."

FIRST AID TO INCREASED PRODUCTION **TRAILMOBILE** *Dependability*



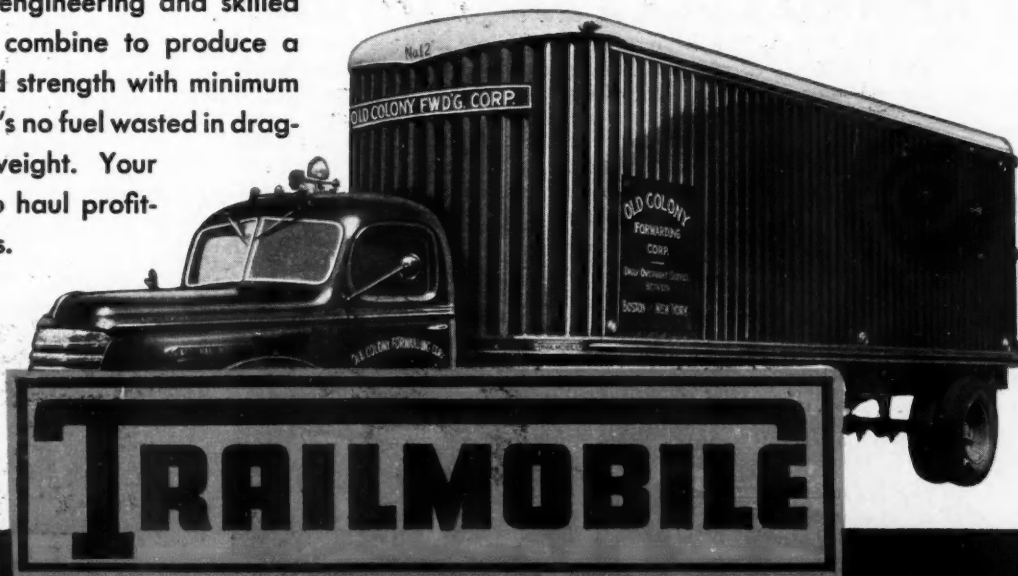
Freight service at express speeds — over-night deliveries to keep factories going — safe deliveries! These are today's demands. They call for speedy, efficient, dependable service.

Shippers may not be interested in the make of equipment you operate, but they're concerned with the kind of service your equipment permits you to give. That's why you should be interested in the dependability of the new Outside Frame Trailmobile.

Here, expert engineering and skilled workmanship combine to produce a unit of rugged strength with minimum weight. There's no fuel wasted in dragging dead weight. Your fuel is used to haul profitable payloads.

It is the lightest weight trailer ever built without the use of expensive alloy metals. Each part of this new Trailmobile not only supports its full share of the load, but it lends strength and safety to the whole unit.

A phone call or letter to the nearest Trailmobile office will bring all the details. Let Trailmobile show you the high-road to low-cost, dependable service.



OUTSIDE FRAME TRAILER

THE TRAILER COMPANY OF AMERICA, CINCINNATI, OHIO
Sales and Service Offices in Principal Marketing Centers

(CONTINUED FROM PAGE 104)
cases. Our thought is that every expedient to get crankcase temperature down for the hot cases, either by increasing pan cooling or using a cooler, is desirable to give more latitude in the choice of oil.

Oil change practice varies all over the range; some don't change at all. Usually those that run oil an excessive mileage (15,000 to 20,000) are providing exceptionally good maintenance, high grade fitting. But it seems extremely probable that there

would be less maintenance expense if the oil were changed oftener.

If a motor is operated on short runs, much idling, cold—the famous “milk-truck” schedule is the worst example—oil changes must be very frequent—500 miles or less; and it will not make any difference what oil is used. The trouble does not come from the oil.

The average passenger car may run 2000 to 4000 miles on a first-class oil in summer. For truck and bus service, running well loaded,

little idling, engine continuously warm, 10,000 miles is fairly common.

But oil is ordinarily cheaper than bearing metal or cylinder surface, and if a transportation company wishes safely to get the most out of oil, they should chemically check the oil as well as the engine mechanically for condition by definite fleet test under their particular operating conditions.

Certainly a neutralization number of 7 or 9 is not good for bearings, and while sludge does little harm in the bottom or on the sides of the crankcase, we do know that it reduces the load-carrying capacity of bearings when in circulation in very small amounts.

For this reason the more expensive and more stable oils look much safer for long mileage. Compound oils, inhibited against oxidation, or with detergents, or both, can be very helpful for a hot crankcase design, or very severe service beyond the design intention, and they must be used for those causes. But they offer no appreciable additional value for a design that runs satisfactorily on a good, straight mineral oil, because this design will *always* be associated with moderate crankcase temperature and good bearing flow.

(Note—The above article is a condensation of a paper read before S & O section of the ATA at Kansas City, on May 5.)

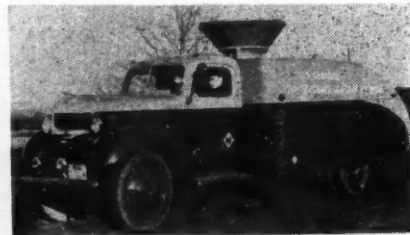
END

(Please resume your reading on P. 22)

QUIZ ANSWERS

(See Page 18)

1. 1-c, 2-a, 3-b;
2. 1-c, 2-b, 3-a, 4-d;
3. 1-b, 2-a, 3-c;
4. 1-c, 2-b, 3-a, 4-d;
5. 1-b, 2-c, 3-d, 4-a;
6. 1-b, 2-c, 3-a;
7. 1-a, 2-c, 3-b, 4-d;
8. 1-a, 2-b, 3-c;
9. 1-b, 2-c, 3-a;
10. 1-b, 2-c, 3-a.



Mounted on a streamlined Dodge truck and fitted with its own gasoline engine this new gyrotory rock crusher is on a nation-wide working demonstration tour of local crushing plants

HIGH STANDARDS



EBERHARD LOCKS and HINGES

NO. 5631 BIG VAN LOCK

An extra rugged lock that secures the door at three points by trigger action. For doors up to 3" thick and 7 1/2 feet high. Furnished right or left hand, or with key-locking handles. (No. 5631 1/2)

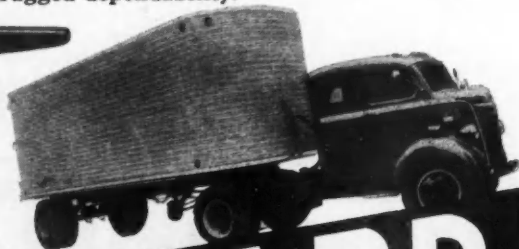


NO. 5814 ROUND CORNER HINGE

A 5 1/2 to 6" radius hinge that permits the door to swing back against the body. One of four Eberhard hinges for round corner bodies. See the catalogue.



The high quality which Kingham builds into their trucks and positively demands in the hardware with which they are fitted is met in the fullest degree with Eberhard hinges and locks. For several decades the better builders of trucks, trailers and bodies have turned to Eberhard for hardware of pleasing design, smooth action and rugged dependability.



EBERHARD
MANUFACTURING CO.
DIVISION OF
THE EASTERN MALLEABLE IRON CO.
CLEVELAND, OHIO





Joy Shuttle Car, equipped with Shuler Axles, at work in Illinois coal mine.

YOU SAID IT—SHULER AXLES CAN REALLY TAKE IT!

No matter where they're used—on coal mining trucks, on transport trailers, on road-building tractors—Shuler Axles can, and *do*, take plenty of punishment!

Yet *toughness* is only part of the reason why Shuler Axles are used on most of America's *heaviest-duty* automotive equipment. Another excellent reason is that Shulers are literally *easier to steer*. And there are lots of applications where this one factor alone is enough to make them *essential*.

Is it any wonder that more and more users are turning to Shuler Axles? If you want the strength and dependability of Shuler construction — *at no extra cost!* — write for specifications and quotations.

BETTER SERVICE!

Many of Shuler's best customers were first won by our eagerness to be helpful in emergencies—such as in rapidly getting out troublesome "specials" and small orders. We invite you to test our cooperativeness on any of our products:

Shuler Square and Tubular Trailer Axles

Shuler I-Beam Trailer Axles for Utility or House Trailers

Shuler Front Axles for Trucks, Tractors, Farm Machinery, etc.

Shuler Truck and Trailer Brakes

Shuler Heavy-Duty Brakes and Trunnion Axles for Low-Platform Heavy-Duty Trailers

Custom Forgings

SHULER AXLE CO., Incorporated, LOUISVILLE, KY.

Export Division: 38 Pearl St., New York, N. Y.

West Coast Warehouse: 440 Golden Gate Ave.,
San Francisco, Calif.

SHULER

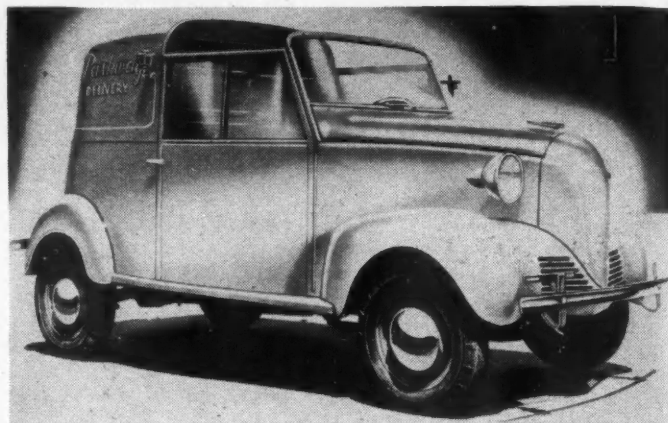
AXLES AND BRAKES

NEW CROSLEY LINE

Features Improved Performance
and Minor Mechanical Changes

A NEW line of Crosley cars, just announced by the Crosley Corp., Cincinnati, includes four commercial models, three passenger models and a station wagon, ranging in price from \$325 to \$479. The Parkway delivery, illustrated, sells for \$399.

The Parkway Delivery, right, is one of Crosley's lowest priced models.



Only Direct Service to
Los Angeles
and Oklahoma City

CAIN'S TRUCK LINES

General Office
810 West Fifth
P.O. Box 297
Phone 2-6281-7-5000
Oklahoma City, Oklahoma
January 7, 1941

Kingham Trailer Company,
Louisville, Kentucky.

Attention: Mr. O. E. Kingham, Sales Manager.

Gentlemen:

Due to the nature of commodities we haul becoming more and more bulky, about three or four months ago it became necessary for us to increase the size of our trailers. Our thought was to try to increase this size and at the same time keep the increase of the weight of equipment to its minimum, and not impair the sturdiness of it too much, as we have a very difficult long haul between Oklahoma City, Oklahoma and Los Angeles, California, taking us through the Rocky Mts.

Among representatives of several of the more popular makes of trailers, we called in your representative, Mr. Roy Pallady of the Pallady Welding & Equipment Co., Okla. City, to give us the specifications of your new Zephyr trailers. After carefully comparing these specifications with other makes, and taking into consideration the service we have received from a Kingham trailer that we have which has been in service since 1932, and two other Kingham trailers we have been using for more than a year, we decided that your new trailers would fit our needs, and purchased three 28 foot and one 32 foot tandem axle, new light-weight zephyrs.

These trailers have been in service for several months between Oklahoma City and Los Angeles, traversing some of the roughest roads there are in the country. They have not given us any trouble and are doing everything you claimed they would do. We do not hesitate to recommend "Kingham" to anyone who contemplates the purchase of good, sturdy trailer equipment.

Yours very truly,
B. Cain, Owner

KINGHAM TRAILER COMPANY

INCORPORATED

LOUISVILLE, KENTUCKY

Here's
**MORE
PROOF
OF WHAT
WE CLAIM**

Mechanical improvements include a heavier crankshaft and camshaft, larger bearings and more accurate valve timing said to account for a considerable increase in engine torque.

Improved brakes are credited with providing smoother stops and the hand brake lever has been relocated to a more convenient position.

The commercial vehicles have a rated capacity of 500 lb. and all models have a wheelbase of 80 in. Gasoline consumption is in the neighborhood of 50 miles per gallon.

ICC Authorized Rail Cuts

Based on the admission that truck transportation has a marked advantage over rail service, the Interstate Commerce Commission is making moves that indicate eventual rail rates pegged somewhat below the corresponding motor carrier rates. It all started last month when the ICC authorized substantial rail rate cuts in the South on new automobile shipment. At present motor carriers in the area are free to meet the rates as long as they meet the test of "reasonableness," but the lower rail rate pegging appears imminent.

Basis of the rail rate reduction is to compensate shippers for the cost of loading and unloading, and the ICC's rate division ignored contentions of trucking interests that store-door pick-up was an inherent advantage that should be protected.

National Refining Co. Offers Fleet Record Forms

The National Refining Co., Hanna Bldg., Cleveland, Ohio, has developed the National Commercial Fleet Service Program based on the operation of its own fleet and modified to handle all kinds of fleets.

The program consists of a set of procedures and recommendations for preventive maintenance and for cost keeping of all trucks. Included in the program is a complete set of forms necessary for keeping records both on the preventive maintenance and costs. The system is available to all fleets. The cost is \$2 per truck per year. The man to get in touch with is G. N. Gascoigne.

MAIL THIS COUPON TODAY!

KINGHAM TRAILER CO., Inc., 15th and Hill Sts., Louisville, Ky.

Gentlemen:—We are interested in your new light-weight Zephyr trailer. () Please send us descriptive folder. () Please have your representative call on us.

Name Company
City State CCJ.

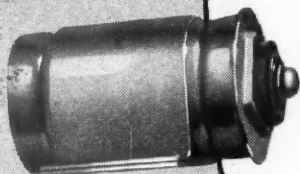
Delco-Remy Heavy-Duty Equipment Increases Operating Efficiency

• Designed and built specially for service in trucks and motor coaches, Delco-Remy oil-filled heavy-duty coils and condensers, and heavy-duty contact points, are popular replacement units among maintenance men. Installation of these Delco-Remy products results in longer service life, fewer road failures, and lower operating costs. Your nearest United Motors distributor will show you the outstanding features of these Delco-Remy units and their importance to coach and truck operators.



OIL-FILLED HEAVY-DUTY COIL

Hermetically sealed against the entrance of moisture, these new-principle coils are specially built for long, tough service with heavy-duty equipment. Area between the coil windings and the outside case is filled with oil of high dielectric quality—providing the finest type of insulation. Case is a one-piece casting to which the arc-resistant cap is hermetically sealed. These units are available for either 6- or 12-volt operation.



OIL-FILLED HEAVY-DUTY CONDENSER

Built on the same principle as the coil, this oil-filled condenser is filled with insulating oil and then hermetically sealed against the entrance of moisture. Extra-long service life is obtained with this unit, which is available in three capacities for HIGH, MEDIUM and SLOW operating speed ranges.

HEAVY-DUTY CONTACT POINTS

Motor coach operators are standardizing on these new Delco-Remy distributor contact points for replacement. They have almost twice the contact area, and more than 100 per cent more tungsten than the contact area, and more than 100 per cent more tungsten than is used in ordinary points. The movable arm is a triple-channel design for strength and rigidity; has a larger, stronger bushing design for strength and rigidity; has a larger, stronger bushing and a special impregnated-fabric rubbing block. Alloy steel, extremely resistant to corrosion and fatigue, is used in the manufacture of the spring.



Delco-Remy

ANDERSON, INDIANA

Delco-Remy service parts are available through independent United Motors distributors served by twenty-one conveniently located warehouses.

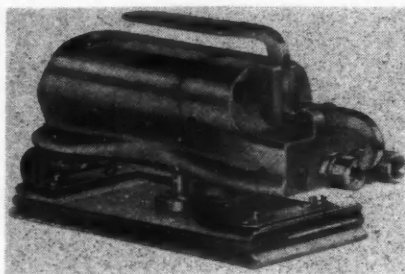
World's Largest Manufacturer of Automotive Electrical Equipment

NEW PRODUCTS

(CONTINUED FROM PAGE 44)

Light-Weight Air Sander

A light-weight, moderately-priced, power sander for wet or dry sanding and polishing operations has been developed by Union Industries, Inc., 7310 Woodward Ave., Detroit, Mich. The "Sand-Air" is said to handle like a blackboard eraser, weighs but 4½ pounds, uses air pressure from 80 to 150 lb. range without regulation, consuming only 4½ cu. ft. of air per minute.

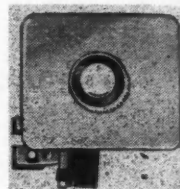


This sander is designed to operate with one-hand control, is said to be well balanced and easy to handle. The pad is suspended from the power unit by flexible cushion supports. It is made of a

special oil-resisting material, backed up with a chromium-plated Swedish steel spring. Special molded pads for fluting or special product forms can be supplied at extra cost. The sander provides 3400 ¼-inch strokes per minute.

Recessed Starter Switch

A new safety starter switch has been developed by the Cole-Hersee Co., 54 Old Colony Ave., Boston, Mass. The push button is recessed in the mounting panel, thus preventing accidental pressure from being applied. The entire unit is of heavy-duty construction.

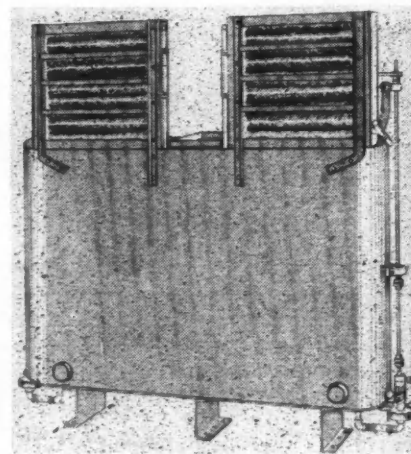


Roto-Graph Wheel Balancer

The Hunter-Hartman Corp. of St. Louis, Mo., has developed a new wheel balancer known as the Roto-Graph. The outstanding feature is that it balances wheels on the vehicle. The outfit includes a built-in wheel spinner and brake, a cushioned seat for the operator and foot and hand controls. It is claimed that any mechanic can learn to operate it in 10 minutes and can do a complete wheel balancing job in five minutes.

Timco-Twin Cooling Unit

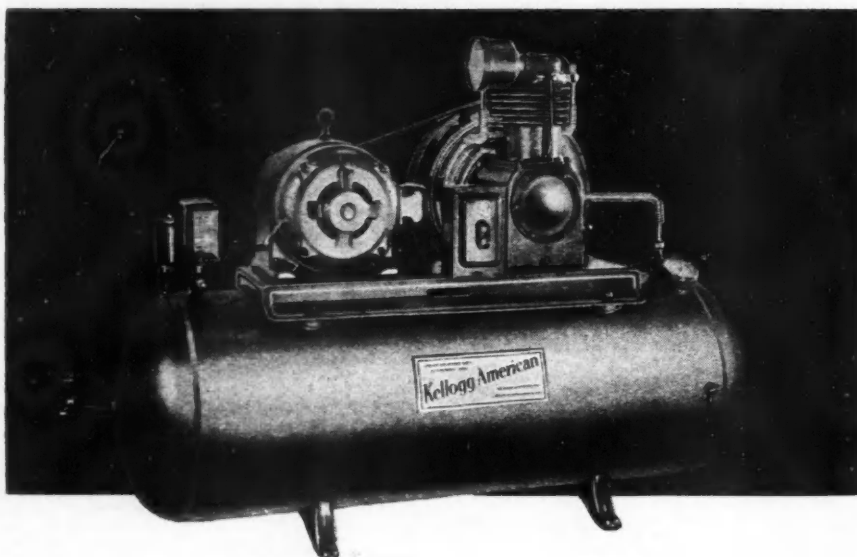
Timpte Brothers, Denver, Col., announces a new Timco-Twin pre-cooling and refrigerating unit for truck and trailer bodies. The unit uses brine as a coolant and consists of two independent cooling



coils mounted on a single brine tank with a capacity for 1200 lb. of ice. Each coil has its own brine pump and blower which can be operated singly or together. The outfit is especially recommended for fresh fruit and produce. Its extra large cooling capacity provides a quick drop from field temperatures.

Cannon Automotive Chemicals

Four automotive compounds are featured in the line of chemical products manufactured by the Cannon Chemical Co., 210 Broadway, Everett, Mass. The original (TURN TO PAGE 112, PLEASE)



WHEN YOU INSTALL THE RIGHT SIZE
Kellogg-American Compressor
YOU ASSURE YOURSELF OF A

TROUBLE-FREE SOURCE OF AIR... FOR YEARS

Everything about the Kellogg-American Cushioned Air Compressor—in design and manufacture—is contrived to equip it with long life at low upkeep. Positive controlled force-feed lubrication delivers just the right amount of oil to every working part. Modern metallurgical science has provided metal alloys to give longest service. And the patented cushion rubber mounting between pump and tank means *quiet* operation as well as *vibrationless* operation—parts don't get shaken loose. Power costs come down, service steps up with a Kellogg-American—the compressor built to *give* service, not to *require* it.

CUSHIONED
AIR COMPRESSORS
CAR LIFTS
CAR WASHERS
PAINT SPRAY GUNS



ON THE PENNSYLVANIA TURNPIKE

BRAKE DRUMS MUST BE GOOD!

That's Why Inter-State

USE

Meehanite



As one of metallurgy's leading developments, MEEHANITE brake drums provide:

- ① Higher resistance to heat
- ② Smooth braking action
- ③ Tough wearing qualities
- ④ Longer drum and lining life

MEEHANITE RESEARCH INSTITUTE

311 ROSS STREET • PITTSBURGH, PA.

When You Specify MEEHANITE You Profit from Over 2½ Million Man Hours' Research in Cast Metals



structure, content, and properties of the metal are controlled to produce the required drum qualities.

WRITE FOR FOLDER OF BRAKE DRUM ADVERTISEMENTS AND ARTICLES



All these add up to Safety and Economy—the goal of all operators, whether they run one truck or a thousand. MEEHANITE brake drums are cast so that the

Take Your Casting Problems to a Meehanite Foundry!

Ansonia, Conn.	Farrel-Birmingham Co., Inc.
Bethayres, Pa.	H. W. Butterworth & Sons Co.
Bridgewater, Mass.	The Henry Perkins Co.
Buffalo, N. Y.	Pohlman Foundry Co., Inc.
Charleston, W. Va.	Kanawha Manufacturing Co.
Chattanooga, Tenn.	Ross-Meehan Foundries
Chicago, Ill.	Greenlee Foundry Company
Cincinnati, Ohio	Cincinnati Grinders Incorporated
Cincinnati, Ohio	The Cincinnati Milling Machine Co.
Cleveland, Ohio	Fulton Foundry & Machine Co.
Denver, Colo.	The Stearns-Roger Mfg. Co.
Detroit, Mich.	Atlas Foundry Co.
Flint, Mich.	General Foundry & Mfg. Company
Hamilton, Ohio	Hamilton Foundry & Machine Co.
Irrington, N. J.	Barnett Foundry & Machine Co.
Los Angeles, Calif.	Kinney Iron Works

Milwaukee, Wis.	Koehring Company
Mt. Vernon, Ohio, Grove City, Pa.	Cooper-Bessemer Corporation
New York, N. Y.	The American Brake Shoe & Foundry Co.
Oakland, Calif.	Vulcan Foundry Company
Orillia, Canada	E. Long, Ltd.
Philadelphia, Pa.	Florence Pipe Foundry & Machine Co., (R. D. Wood Company, Selling Agents)
Phillipsburg, N. J.	Warren Foundry & Pipe Corp.
Pittsburgh, Pa.	Meehanite Metal Corporation
Pittsburgh, Pa.	Rosedale Foundry & Machine Co.
Rochester, N. Y.	American Laundry Machinery Co.
St. Louis, Mo.	Banner Iron Works
St. Paul, Minn.	Valley Iron Works
London, Eng.	The International Meehanite Metal Co., Ltd.
Waterloo, N. S. W.	Australian Meehanite Metal Co., Ltd.
Johannesburg, South Africa	Meehanite Metal Co. (S.A.) (Pty.) Ltd.

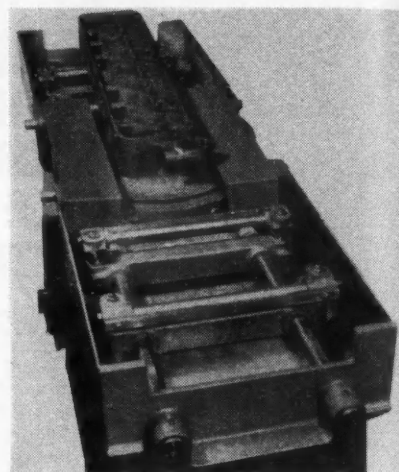
NEW PRODUCTS

(CONTINUED FROM PAGE 110)

Rustbuster is said to clean, clear and semi-permanently rustproof cooling systems without draining or flushing, while Rustbuster Radiator Flush is recommended for clogged systems. For car washing, woodwork, upholstery and general cleaning use, Dirtbuster Cleaning Beads are available, while Dirtbuster Cleaning Concentrate, when diluted with water in varying proportions, is said to make an excellent cleaner for floors, lifts and lubrication equipment.

Lempco Wet Surface Grinder

Resurfacing cylinder heads, cylinder blocks, manifolds, fuel pump bodies and other parts is the work of a minute or two with the new Lempco Wet Surface Grinder, according to Lempco Products, Inc., Bedford, Ohio. A solid grinding wheel, 16 in. in diameter, quickly levels off even the hardest of cast iron parts. By building the wet grinding feature into the machine Lempco claims it will grind soft aluminum heads without loading up the abrasive wheel. Further advantages claimed for wet grinding are that the flow of coolant dissipates the grinding heat and prevents warping or distortion and at the same time



eliminates the clouds of dust always present in dry grinding. Wheel dressing is also reduced to a minimum.

New Etching Tool

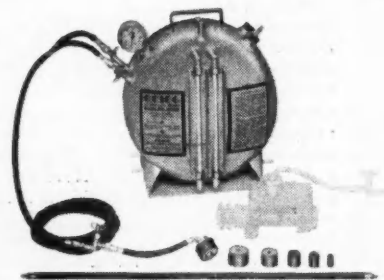
A small and inexpensive etcher for marking tools and small parts has been announced by the Ideal Commutator Dresser Co., 3051 Park Ave., Sycamore, Ill. This new No. 9 "Thin Line" model is enclosed in a metal cabinet, the cover of which



becomes a work plate when it is in use. The complete unit includes a 9-in. primary lead and plug, 2-oz. heat-resisting hand-piece with 3-in. lead, and a 4 x 6 in. work plate. Operation at 115 volts 50-60 cycle is standard. Other voltages and frequencies are available.

Double-Purpose Bleeder

A new portable Two-Compartment pressure brake bleeder and flusher is announced by Grigg Specialty Tools, Hun-



tington Park, Cal. The tank, of three gallon capacity, holds both brake fluid and (TURN TO PAGE 114, PLEASE)

THIS TRAILER SAVES WEIGHT — ADDS TO YOUR PROFITS...

EDWARDS lightweight trailers cut deadweight so you can haul more payload... and still stick to tried and proved methods of trailer design. Much of the excess weight is saved by fabricating from hi-tensile steel. Thus, much lighter sections can be used to carry the load imposed without any sacrifice in strength.

By following proved principles of trailer engineering, Edwards also saves you money when repairs are necessary. That also counts in operating profit.

Wide frames, straight end type heavy duty springing, Timken tubular axles, full width pick-up plate and more than 20 other features make Edwards a sound trailer investment. Investigate today.

KROEHLER MFG. CO.
WORLD'S LARGEST MFRS. UPHOLSTERED FURNITURE
DAVENPORT WASH. LIVING ROOM FURNITURE

EDWARDS HI-TENSILE STEEL SEMI-TRAILERS
EDWARDS IRON WORKS, INC., SOUTH BEND, IND.

ATTRACTIVE PROPOSITION FOR QUALIFIED DEALERS—WRITE OR WIRE



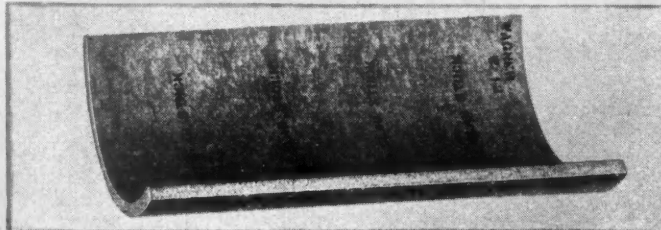
Blocks, tapered blocks, sets, molded segments.



Modified slabs in $\frac{3}{8}$ " and $\frac{1}{2}$ " thickness.



CoMaX in rolls available up through 6" x $\frac{3}{8}$ ".



Molded radius slabs available up to $\frac{3}{4}$ " thickness.

For
maximum
brake performance
—it pays to standardize on

Wagner BRAKE LININGS

No brake job is too big or too tough for Wagner Brake Lining.

As manufacturer of Lockheed Hydraulic Brakes, Wagner Air Brakes, and Wagner Hi-Tork Brakes, Wagner has a valuable experience in braking problems and is well qualified to know the type of lining a brake should have. This knowledge is reflected in the complete line of Wagner Brake Lining.

No matter what your friction material needs may be—your Wagner jobber can take care of your requirements. The Wagner line includes CoMaX in rolls, sets, blocks, modified slabs and radius slabs. It also includes Standard Molded, Zinc-Wire Woven, Heavy Duty Woven, Hydraulic Compressed and Wagner "45"—one of the lowest priced good woven linings on the market.

CoMaX is a high-quality molded brake lining and has reinforced wire-mesh backing which assures added strength, and also serves as a rivet base, thus permitting deeper count-sinking and consequently longer lining life.

CoMaX is uniform in texture; as the lining wears, the same type of brake surface is always exposed to the drum. It is easy on drums; contains no abrasive material. It is ideal for high speeds; maintains its perfect performance under severe braking conditions. It is quiet; grips silently—no "howling" or "squealing." Constant friction permits smooth even controllable deceleration. It is age-proof; does not deteriorate with age.

CoMaX material with reinforced backing for heavy-duty truck, trailer and bus operation, is available in modified-slab form in $\frac{3}{8}$ " and $\frac{1}{2}$ " thickness of full-coverage length, in widths of $3\frac{1}{2}$ ", 4", $4\frac{1}{2}$ ", 5" and 6"—in 16" radius.

Every type and size in the complete Wagner line meets a definite need, and there is a Wagner jobber near you prepared to take care of YOUR needs. Don't delay. Consult your Wagner jobber today, or write us.

Clip and Mail Coupon Today!

AUTOMOTIVE PARTS DIVISION

B41-7

CCJ

Wagner Electric Corporation

6400 Plymouth Avenue • St. Louis, Mo., U. S. A.

____ Please send complete information on Wagner CoMaX Brake Linings.

____ Also send free copy of Wagner Catalog BU-128.

Name and Position _____

Firm _____

City and State _____

I Buy My Parts From _____

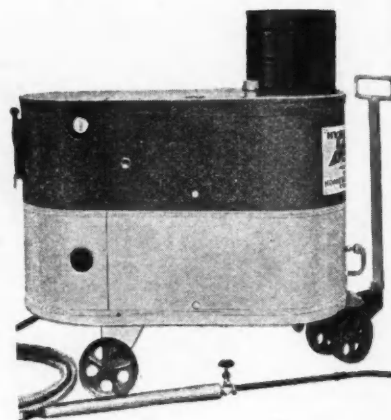
NEW PRODUCTS

(CONTINUED FROM PAGE 112)

hydraulic brake flushing compound. With only one connection to the master cylinder the operator flushes the hydraulic system and refills completely with new brake fluid. The unit is also equipped with sight gauges, which enable the operator to check the exact amount of fluid used in each operation. The operator can also tell just how much fluid remains in the bleeder tank at all times. A speedy air-tight connection to the master cylinder is made by special rubber expanding adapters.

Magnesium Fire Killer

A new substance, concocted for the purpose of extinguishing magnesium fires in industry and in incendiary bombs, has been developed through the combined research of Dow Chemical Co., Midland, Mich., and Pyrene Mfg. Co., Newark, N. J. Pyrene G-1 fire extinguisher powder is a dry, inert compound containing a material which forms a heavy blanketing vapor when heated, effectively shutting off oxygen. The powder is applied to the fire by spreading it with a scoop or shovel. Being non-abrasive, it may be used freely around machinery.



Two new Hypressure Jenny steam cleaners were described in the June issue. But the cut of Model JL, above, arrived too late for inclusion. Model JM is larger. Homestead Valve Mfg. Co., Inc., Coraopolis, Pa., is the manufacturer.

NASH

ONE MAN Cable-Lift SPARE TIRE CARRIER



TIRE CHANGING IS NOW AN EASY JOB

One man can raise or lower the heaviest spare quickly and with little effort when a change is necessary. For carrying on the road, the spare is firmly held in place with heavy securing bolts and safety nuts.

LESS DEAD WEIGHT—MORE PAY WEIGHT

The design and sturdy all-welded construction save weight and insures long life. The Nash is the only carrier that produces a payload dividend.

TYPES FOR ALL TRUCKS AND TRAILERS

Under frame model for trucks, side mount model for trailers with frames and frameless model for frameless trailers are available. Each type can be furnished to handle 20", 22" or 24" rims or steel wheels of any make. Specify Nash for new equipment. Your dealer can furnish it for present equipment.

TRUCK and TRAILER DEALERS—Practically every truck and trailer operator is a prospect for this BETTER tire carrier, and will thank you when you sell him. Look up Nash Carriers in your Factory Manual, or ask us for full information.

TIME TESTED

SIMPLE TO INSTALL

EASY TO OPERATE

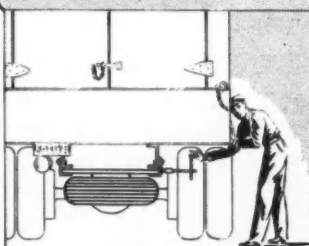
SAVES TIME

SAVES WORK

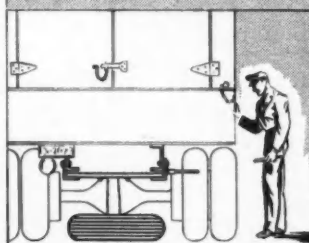
NO TIRE RUB

MAXIMUM CLEARANCE

PRICED RIGHT



UP POSITION — Illustration shows carrying position of spare tire. To lower, remove safety nuts and drop.



DOWN POSITION — Illustration shows spare on road ready for lifting. Insert pick-up member, raise into place with winch and cable and replace safety nuts. Simple as A B C.

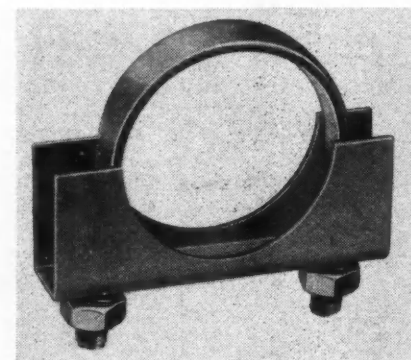
L. B. NASH & BRO. CO. 3628-30 LINCOLN AVE., CHICAGO

Spark Plug Easily Re-Gapped

A new Blue Crown spark plug, specially designed for Hesselman engines, has been announced by the Motor Master Products Corp., 4757 Ravenswood Ave., Chicago, Ill. The plug features a newly designed ground wire which permits instant regapping by placing a thickness gage between the center and ground electrodes, and with a slight tap, forcing the ground wire down to the proper gap. A heavy-gage wire is said to insure longer life.

Permite Muffler Clamp

A muffler clamp which is claimed to provide an air-tight connection without pinching the tail pipe has been announced by Aluminum Industries, Inc., Cincinnati, Ohio, manufacturer of Permite automotive



parts. Due to the wide circular contact surface which gives equalized pressure around the pipe, it is said to be impossible to "tighten out of shape."

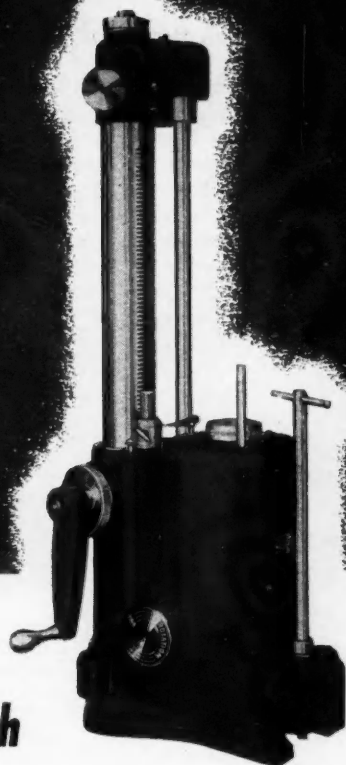
Safety Control Shuts Off Engine

A device known as the Reco Auto Safety Control, which automatically shuts off idle running engines after 12 to 15 sec., has been developed by the Reynolds Electric Co., 2650 W. Congress Street, Chicago, Ill. It consists of a cabinet containing a

(TURN TO PAGE 116, PLEASE)

777

PER-FECT-O

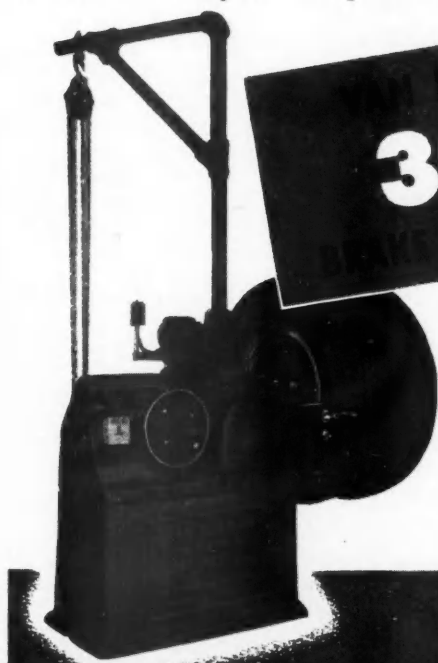


... the "One-Man Bar" that
pays for itself with only one job a month

777 is a heavy-duty bar . . . yet one man can handle the whole job, without help. He can set the bar on the block, center it, lock it in position . . . and set the tool to size, *away from the bar*, with the special micrometer. Then the cutter goes smoothly down the cylinder wall, guided by the four Van Norman "Catspaws" that prevent vibration, weaving

and taper. Perfect finish is assured *in one cut, every time*.

Only Per-Fect-O offers this speed and unvarying accuracy which pay for the bar with *only one job* out of all the jobs you will do in a month . . . plus Van Norman quality construction that spells long-term service with minimum maintenance. Get the whole story on Per-Fect-O Profits. **WRITE.**



303

WITH
SIX
EXCLUSIVE FEATURES...

- 1 Independent Grinding Attachment finishes drums to mirror smoothness, removes all turning marks.
- 2 3" Hollow Spindle revolves, and also slides horizontally.
- 3 144 Square Inches of Bearing Surface.
- 4 5 Feeds Forward, 5 in Reverse . . . plus 3 speeds . . . give necessary range for all types of drums.
- 5 ½ HP Motor on Grinder . . . constant speed, no noise.
- 6 Van Norman Quality is built into every feature of this precision machine tool.

Write for complete details on these 6 exclusive Van Norman features.

QUALITY
IS THE REASON WHY
"IT PAYS TO
VAN NORMANIZE"

NEW PRODUCTS

(CONTINUED FROM PAGE 114)

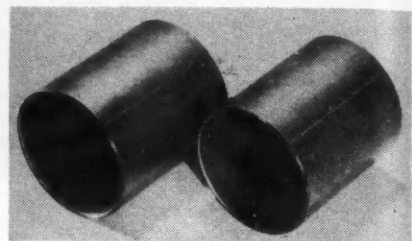
relay and thermal delay switch, push button and tell-tale light and a control switch for mounting on dash or floor board. When the transmission shift lever is in neutral position, the switch is "on" and the ignition will be turned off in 12 to 15 sec. by the thermal delay switch stopping the engine. If the shift lever is in other position, the switch is "off" and will not affect the ignition which remains "on," making it possible to idle the engine with a gear engaged and the clutch held out.

General Improves Tread

The General Tire and Rubber Co. has improved its Silent Grip (windshield-wiper-action) tire by the addition of saw tooth edges on the ribs. Where there were once gripping angles every few inches around the tire, there are now, in addition, saw tooth angles every quarter inch.

Bronze on Steel Bearing

A new bearing material made of high-grade bronze alloy backed with steel, has been developed by the Johnson Bronze Co., New Castle, Pa. Identified as "Pre-Cast Bearing Bronze on Steel" the new material makes up into extremely thin



walled bearings and is also available in roll form. Full details may be secured from the manufacturer.

Wall Blow-Proof Torches

Two new mechanics' torches featuring blow-proof pumps have been announced by the P. Wall Mfg. Supply Co., Pittsburgh, Pa. The Wall No. 41 burner is mounted on



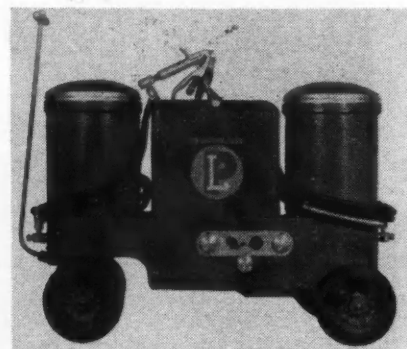
a drawn brass tank and the filler plug is in the funnel-shaped bottom. All fittings and the bottom plate are mechanically locked to the shell. No. 141 is for gasoline while No. 142 is for kerosene. Each has a capacity of one quart of fuel.

"Three-In-One" Cleaner

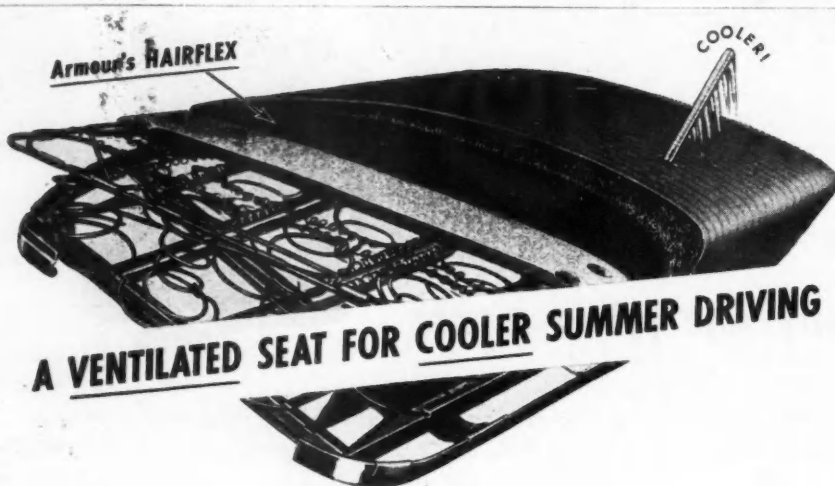
A new compound which cleans, polishes and waxes in one operation has been introduced by Albion & Sons, Cambridge, Mass. Car-glo is said to contain no residual oils and no sharp alkalis which would harm the finish of the car. It is said to be non-toxic and harmless to the hands of the user. List price is \$0.39 per pint, f.o.b.

New Model "Pressurelube" Unit

A new, electrically-operated, portable greasing unit has been announced by Pressurelube, Inc., 22 E. 40th Street, New



York, N. Y. Powered by a six-volt storage battery, the lubricator incorporates a charger, permitting renewal of the charge (TURN TO PAGE 118, PLEASE)



Science Proves Armour's HAIRFLEX Pads for Truck Seats 36% COOLER Than Substitute Filler

Scientific laboratory evaporation tests under controlled summer conditions showed 8.3° F. mean temperature drop for Armour's HAIRFLEX, 6.1° F. mean temperature drop for next most popular seat filler—a 36% advantage in COOLNESS.

The reason: Moisture evaporates rapidly from Armour's HAIRFLEX because the open, ventilated structure of the rubberized curled hairs allows much air to circulate through HAIRFLEX. This air carries off the moisture fast—makes Armour's HAIRFLEX definitely COOLER than substitute seat fillers, old or new!*

For COOLER summer seats, in addi-

tion to year 'round comfort and safety for your drivers, specify Armour's HAIRFLEX in your new trucks. Remember—comfortable drivers are safer drivers.

*Evaporating moisture takes away heat . . . leaves the surface cold. Example: ether. Seat fillers other than HAIRFLEX are tightly packed fibres, intercellular constructions. They allow little air circulation, less evaporation—less cooling. Armour's HAIRFLEX is COOLER!

*Drivers sit IN,
Not on HAIRFLEX*

When You Buy, Specify

ARMOUR'S HAIRFLEX

ARMOUR AND COMPANY • CURLED HAIR DIVISION

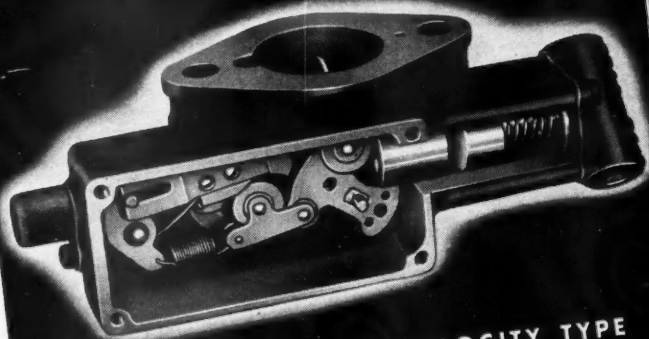
1355 W. 31st STREET

CHICAGO, ILLINOIS

PIERCE GOVERNORS ARE

Guaranteed for One Year

PIERCE *Seal-Aire*



LONG-LIFE VACUUM VELOCITY TYPE

PIERCE *Flyball*



TRANSMISSION-DRIVE TYPE

YOU WANT A GOVERNOR that really stands up in regular truck service — defying dust, sludge, gum, heat, wear, cheating and tampering.

Pierce Governors are *guaranteed for a full year*—even in the most severe service! Such a guarantee can be given only because Pierce Flyball and Pierce Seal-Aire Governors embody new features of governor design and construction that assure far longer life.

The Pierce Seal-Aire Governor has *inside vents* . . . only the *cleaned* air from the engine air-filter can get into the rigid cast-iron governor body. No dust can enter, or sludge form to cause gumming, sticking, and excessive wear. Many times longer life is assured and there's no chance for tampering. That's why Pierce can *guarantee this governor for one full year*. Use it where *engine-speed control* is satisfactory, such as cab and delivery fleet operation in cities.

For road speed control—without limiting engine power—use the Pierce Flyball Transmission-Drive

Governor, readily installed with flexible shaft to a dual-drive at the speedometer take-off. It can be set for *any* desired speed limit on the open road without cutting the full engine power needed on hills, in traffic "spots" or heavy going in inter-city and heavy-duty hauling. It makes possible better control in traffic, saves time and engine wear, and makes for greater safety. It will outlast any other governor, and is *fully guaranteed for one year*.

Select the installation that meets your type of fleet service, or write us for information on application to your fleet equipment.

THE PIERCE GOVERNOR CO. • ANDERSON, INDIANA

1611 OHIO AVENUE

*Industrial and Automotive Engine Governors
Manufacturers of the Sisson Automatic Choke*

● Pierce Governors are standard equipment on Mack Trucks, Buda, Hercules, and other well-known engines; on the majority of diesel engines for industrial, marine and automotive service; and are available for all automotive equipment.

GUARANTEED
Pierce Governors

NEW PRODUCTS

(CONTINUED FROM PAGE 116)

when the unit is not in use. The pump draws grease from either of the two reservoirs and delivers it to the gun at pressures which may set from 1000 to 12,000 lb. per sq. in. Selection of the pressure and changing from one reservoir to the other are controlled by knobs on the control panel. Special high-pressure hose is furnished, which is said to withstand pressures up to 40,000 lb. per sq. in. A single-tank Pressurelube model is also available.

Modernized Gould Batteries



as original "equipment" size; "heavy-duty" size or the competitive "scout" size.

The Gould Storage Battery Corp., Depew, N. Y., has modernized its line to include permanent and easily understandable markings on the case to establish each unit

Grafil Tool Dolly

A mobile brake tool dolly is being of-



fered through jobbers by the World Bestos Co., Paterson, N. J., manufacturer of Grafil brake linings. It is equipped with three decks for tools and two removable trays for small brake parts, as well as hooks for an extension light cord. The unit is mounted on swivel casters for easy maneuvering.

WHAT IS *Good* CIRCULATION?

The Kind Where You Average Five Readers Per Copy and Get Most of the Field's Advertising.

COMMERCIAL CAR JOURNAL has 30,000 distribution monthly. 25,000 of this is controlled. It goes to the operators of truck fleets, with 8 or more trucks. 4,000 is paid—\$2 per year—cash in advance. That goes to the truck trade.

The Fleet Operators who get COMMERCIAL CAR JOURNAL have to be the best in the field, because we pick them by hand. The trade outlets have to be "tops," because the \$2-a-year subscription price automatically does its own selecting.

COMMERCIAL CAR JOURNAL readers tell us that an average of 5 people read each copy. That means reader interest.

In 1940 COMMERCIAL CAR JOURNAL carried 1084.49 pages of paid advertising. More than twice as much as the second publication.

Good circulation had a lot to do with that—plus excellent editorial content.

COMMERCIAL CAR JOURNAL LEADS

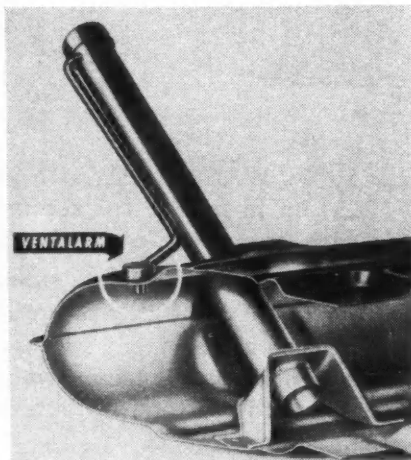
COMMERCIAL CAR JOURNAL

A Chilton Publication

Chestnut & 56th Sts.



Philadelphia, Pa.



The illustration shows how the Scully Ventalarm, made by the Scully Signal Co., Cambridge, Mass., has been combined with a subsurface filler neck on the new Packard Clipper. The ventalarm whistles until the tank is one gallon from full; the subsurface filler prevents the escape of excess vapor

UMS Extends Lining Service

United Motors Service, 3044 W. Grand Boulevard, Detroit, has announced a number of new units in its Inlite brake lining line. The new items include additional drilled and counterbored sets and undrilled segment sets for passenger cars, oversized segment sets, matched drilled and counterbored sets for special truck applications, segment sets for all makes of trucks, and a new heavy-duty alloy-wire woven lining. Full details from United Motors Service headquarters or distributors.

TRUCK performance standards today, more than ever before, call for maximum pay loads at minimum operating costs. That's why leading body manufacturers are constantly seeking ways to reduce dead weight without impairing operating efficiency.

In the medium-duty and light-duty refrigerated truck class, Semi-Rigid Bat Fiberglas is an ideal insulation . . . ideal because it is extremely light in weight, easily handled, yet it provides lasting protection against troublesome and costly refrigeration losses and food spoilage.

Fiberglas is a stable, inorganic material made from molten glass spun into fine, soft threads. These threads are felted, mixed with a chemically inert binder, and compressed into semi-rigid bats. Fiberglas forms a highly effective barrier to the passage of heat. It does not absorb either moisture or odors, and it's entirely verminproof, rotproof, and fireproof as well!

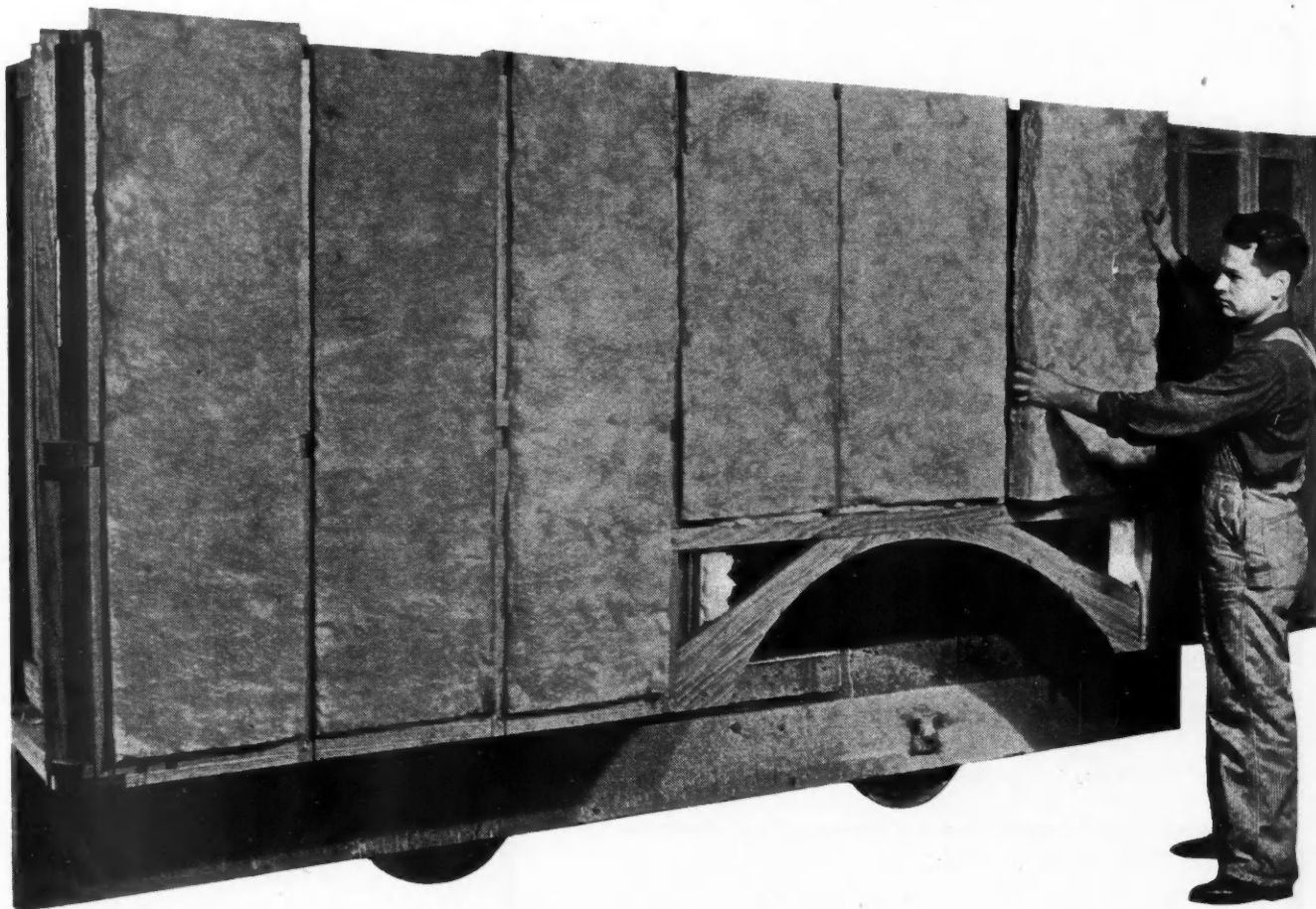
**IF IT'S LIGHT WEIGHT YOU WANT,
PLUS ECONOMY... PLUS SERVICE...**
*insulate truck bodies with FIBERGLAS**

Applied between body stakes with a friction fit, the resiliency and firmness of Semi-Rigid Bat Fiberglas holds this insulation securely in place. Vibration and jolts will not cause it to settle. For curved tops and fill-in places, Fiberglas in plain wool form may be used with excellent results. Semi-Rigid Bat Fiberglas comes in standard sizes which are readily cut with a knife to any size and shape required. It is available in a range of thicknesses.

Floor areas of all truck bodies should be insulated with Armstrong's LK Corkboard because it supports the load and absorbs vibration, in addition to providing efficient insulation. Full facts about Armstrong's complete equipment insulation line are in the new, free booklet, "Insulation for Trucks and Trailers." Write for your copy to Armstrong Cork Co., Building Materials Division, 913 Concord St., Lancaster, Pa.



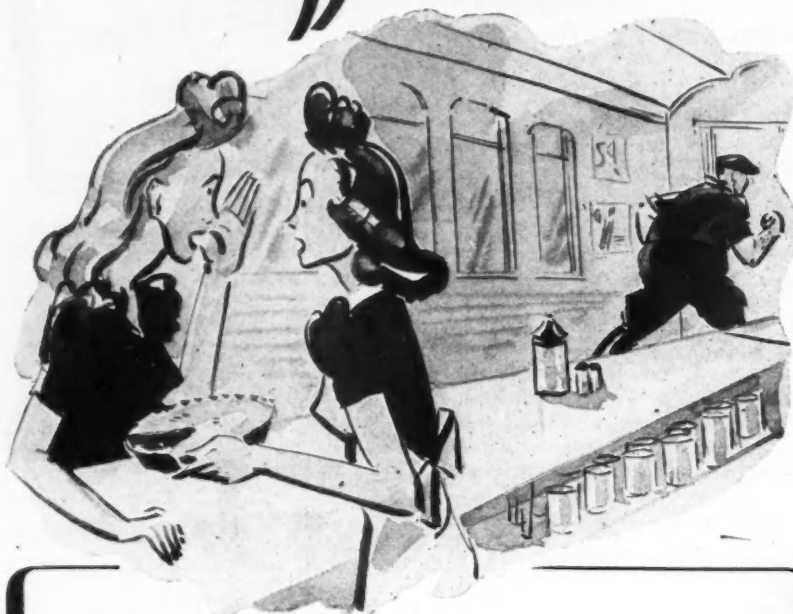
*Reg. U. S. Pat. Off. Owens-Corning Fiberglas Corp.



LIGHTWEIGHT FIBERGLAS in Semi-Rigid Bat Form is shown here being applied to a medium-duty truck body constructed for the Kraft-Phenix Cheese Company by the Batavia Body Company. This form of Fiberglas is easily cut with a knife to fit any space. Installation is quick and inexpensive. Fiberglas will stay in place without settling and provide lasting, efficient insulation.

ARMSTRONG'S EQUIPMENT INSULATION
Temlok · LK Corkboard · Fiberglas

**"...AND HE USED TO GO TO
THE CHIROPODIST FOR
THE STRANGEST REASON!"**



When a seat spring goes haywire and makes the driver want to see a corn doctor, it's time to do something. Of course, you can't stop friction between springs and upholstery fabric and the driver's trousers in a busy cab . . . but you can delay its discomforting effects by re-upholstering with the long-lived fabric . . . that is comfortable, safe and economical.

You know the kind of upholstery we mean — that tough stuff, **CHASE REDO!** It's the material so strong, so resistant to cracking, peeling and wear that it makes you think of rawhide!

Next time you re-cover seat cushions, why not ask the trim shop to use extra long-lived **CHASE REDO?** Or, if you operate your own trim shop, tell us to send the foreman a bunch of good-looking **REDO** swatches and the address of our distributor.

CHASE REDO

L. C. CHASE & COMPANY 295 FIFTH AVENUE, NEW YORK CITY
Division of SANFORD MILLS

BRANCHES: BOSTON, DETROIT, CHICAGO, LOS ANGELES • MILLS: SANFORD, ME., READING, MASS., TROY, N. H.

ATA FORUM

(CONTINUED FROM PAGE 35)

"4. Does he seem to be worried or lazy?

"5. Is he sensitive and retiring? Does his mind wander?

"6. Is he argumentative and conceited?

"7. Does he appear to have a one-track mind? Is he painstaking and meticulous?

"The elements of what we call temperament must balance or we will have an erratic type of individual who may be qualified for certain jobs but certainly not as a safe driver. If the applicant has a large amount of drive and is very alert, we must also look for evidence of self-control, stability and conservativeness, or we will have an employee who will blow up under pressure. If the applicant shows evidence of lack of consideration for others, we may expect the criminal type who will pocket a C.O.D. or steal valuable cargo."

There was no formal paper on the prevention and handling of minor accidents but a spirited discussion nevertheless developed spontaneously.

John W. Blood, of Southern Kansas Stages, Wichita, declared that in his operation "every scratch is a minor accident and must be reported. If a driver has three minor accidents causing \$1 or more in repairs we figure he needs attention. We feel that a succession of minor accidents will lead up to a big accident unless the driver is checked. When they happen there is something wrong either with driver's eyes or his attitude. We believe minor accidents are the best indication of what we can expect later on in major accidents unless we do something about them."

Another operator, whose name your reporter failed to catch, declared that by requiring the reporting of all accidents he had doubled his accident frequency. It was, he said, a good way to complete his records and to find out the tendencies of his drivers.

Morgan B. Spier, Jr., of Horton Motor Lines, Inc., Charlotte, N. C., supported the belief that "if a driver is sloppy in the handling of a big piece of equipment around the yards

(TURN TO PAGE 122, PLEASE)

MORE MILES BETWEEN OVERHAULS



SUPER-LOY

Cadmium-Silver

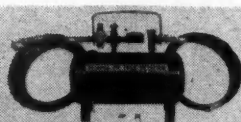
HEAVY-DUTY BEARINGS

The fact that Federal-Mogul Super-Loy Bearings give exceptional performance under really tough operating conditions, assures added economies in bearing service and overhaul maintenance on any truck or bus. Super-Loy Bearings stand up better under un-

usual high-temperature operation, produce more mileage between overhauls and provide an economical solution where a crankshaft problem is encountered. Ask your Federal-Mogul source of supply about Super-Loy Bearings.



FEDERAL-MOGUL CORPORATION • DETROIT, MICHIGAN



QUICK, ACCURATE CHECK-UP

Without opening up the engine, you can now diagnose internal engine conditions, ALL bearings and oil lines, simply by hooking up the Federal-Mogul Oil Leak Detector and dropping the oil pan. Any mechanic can use this simple, accurate device. Provides an ideal check-up on finished overhauls before they leave the shop. Write for details and price.

ENGINE BEARINGS FOR EQUIPMENT • FOR SERVICE • ENGINEERED FOR OIL CONTROL

FEDERAL-MOGUL CORPORATION
4805 John R. St., Detroit, Mich.

Send complete details and price
on the Oil Leak Detector.

Name _____

Address _____

City _____ State _____

(CONTINUED FROM PAGE 120)
and causing minor damage, you can be sure he'll be sloppy with it in traffic.

Harold J. Jones, of Automobile Shippers, Inc., Detroit, and chairman of the ATA Safety and Operations Section, said, "In our operation vehicles go over a pit when they come in and are inspected. Minor damage is called to the driver's attention if he has not reported it. Our shop will not make any repair of such damage unless it has a driver's

report on it. The driver is held until he makes the report. Carelessness creeps in if minor accidents are ignored. I have seen drivers spend two hours at a table trying to justify minor accidents. They don't want to have to do that often."

Mr. Blood injected the belief that men are entitled to some consideration. His operation, he said, used the demerit system. Failure to report a minor accident gets so many demerits. If he accumulates 60 demerits he's out. Demerits are based upon

the nature of the accident.

William Lawrence, U. S. Truck Lines, Inc., Cleveland, reminded operators that current labor conditions should be considered in dealing with men.

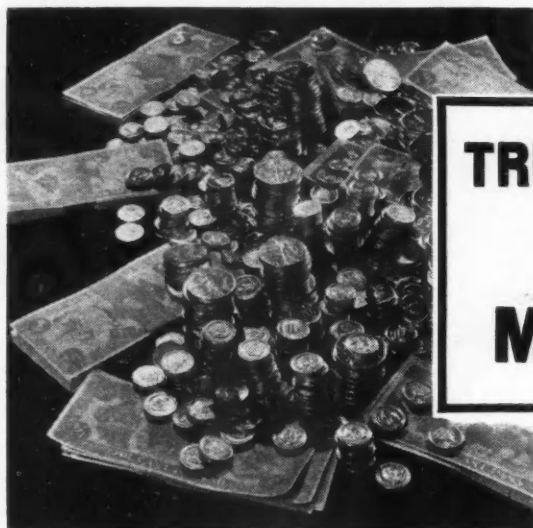
"Laying off men today," he said, "is frequently no penalty to the men. They can get jobs elsewhere. The employer suffers the penalty because he had built up an investment in the driver. We can't handle men mathematically by the number of accidents they have. Each must be handled individually; it can't be automatic. The employer must consider each case from his own standpoint, not from the driver's."

In the course of his comment, Mr. Lawrence defined a safety man as "just an efficiency man compensating for the lack of perfection in management." That compels the safety man, he said, to possess a keen sense of observation, fairness and judgment.

Mr. Billings, of Liberty Mutual, mentioned before in this report, presented an enlightening paper on "ascertainment and Handling of Witnesses." This will be presented in full in a subsequent issue. All that need be said here is that, according to Mr. Billings, "the names of witnesses at the scene of an accident are important because, more than any other information, they are of invaluable assistance in determining the merits of a case and guaranteeing a square deal for the driver. Witnesses are indispensable in obtaining the necessary evidence that will: Help to avoid exaggerated claims and collect just damages; defend the company and driver from unjust prosecutions for violations of laws; permit prompt and effective handling of the accident, thus protecting customer good-will and taking a minimum of the driver's time."

In the discussion Mr. Billings was asked if the driver should be vested with the responsibility of getting a printed release signed in cases where the other party admits fault. The questioner seemed to think that this should be the function of the Claims Department.

Mr. Billings responded that in court the value of a release is not as great as many people think it is. He said insurance companies are not in favor of using them. It is not up to (TURN TO PAGE 125, PLEASE)



**TRUCK-TIME
is
MONEY**

Avoid Costly Tie-Ups by Making Quick, Permanent Radiator Repairs

Nothing can tie up a truck quicker or oftener than a bad-acting radiator . . . and a truck that's tied up costs money. You can avoid needless loss of time and the expense of many big repair jobs, by catching radiator leaks with Kester Cored Radiator Solder, as soon as they show up.

Your shop can "fix 'em so they stay fixed," with Kester Radiator Solder. That's because the solder itself is freer flowing . . . specially compounded, from virgin metals, to withstand severe temperature extremes of heavy-duty truck service. The core is a special, more active flux . . . just the right kind and amount for radiators.

It all adds up to quicker, easier, more permanent radiator repairs that all but eliminate tie-ups due to radiator trouble. Standardize on Kester Radiator Solder in your shop! It will help keep operating costs down. Order from your wholesaler.



KESTER SOLDER COMPANY

4205 Wrightwood Avenue Chicago, Illinois

Eastern Plant: Newark, N. J.

Canadian Plant: Brantford, Ont.

KESTER SOLDERS
FOR EVERY AUTOMOTIVE USE

(CONTINUED FROM PAGE 122)

witnesses, he pointed out, to settle the question of fault. Get the facts and let the facts decide.

Fleet safety programs for employees other than drivers received inaugural treatment from W. Robert Smith, manager of personnel and insurance, Scott Bros., Inc., Philadelphia. This was the first time the subject had been aired publicly. Said Mr. Smith:

"There is a tendency to limit safety programs to prevention of accidents resulting from actual operation of motor vehicles. Unless the program aims at preventing other accidents it faces burdensome operator expense and inefficient personnel. Operation of a terminal, an office, a repair shop produces many hazards which, in the absence of proper supervision and control, result in loss and damage to property of the carrier and of the customer and injury and death to the public and carrier's employees.

"In many motor carrier operations the combined cost of cargo loss and damage and workmen's compensation may equal from 50 to 75 per cent of the cost of truck public liability and property damage claims and insurance."

Mr. Smith suggested the following program to promote safety in the terminal:

1. Selection of qualified terminal employees.
2. Adequate instruction in safe, efficient practices.
3. Provision of safe equipment and facilities.
4. Periodic inspection of premises to eliminate and reduce hazards.
5. Coordination of employee and employer, or management, in the safety effort.
6. Development and maintenance of personnel records.
7. Effective safety propaganda."

Mr. Smith particularly warned of the dangers in the widespread practice of transferring to terminal work employees who have accident records in other phases of motor carrier operation.

Comment from the floor was in agreement with Mr. Smith's premise.

John P. Holtkamp, of the Fidelity & Casualty of N. Y., declared that attention to compensation exposures and how to prevent them is not what it should be in over-the-road fleets.

He said experience was better in local cartage fleets. Because of machine exposure, grease pits and the like the garage repair shop is a big field for compensation accident reduction, he said.

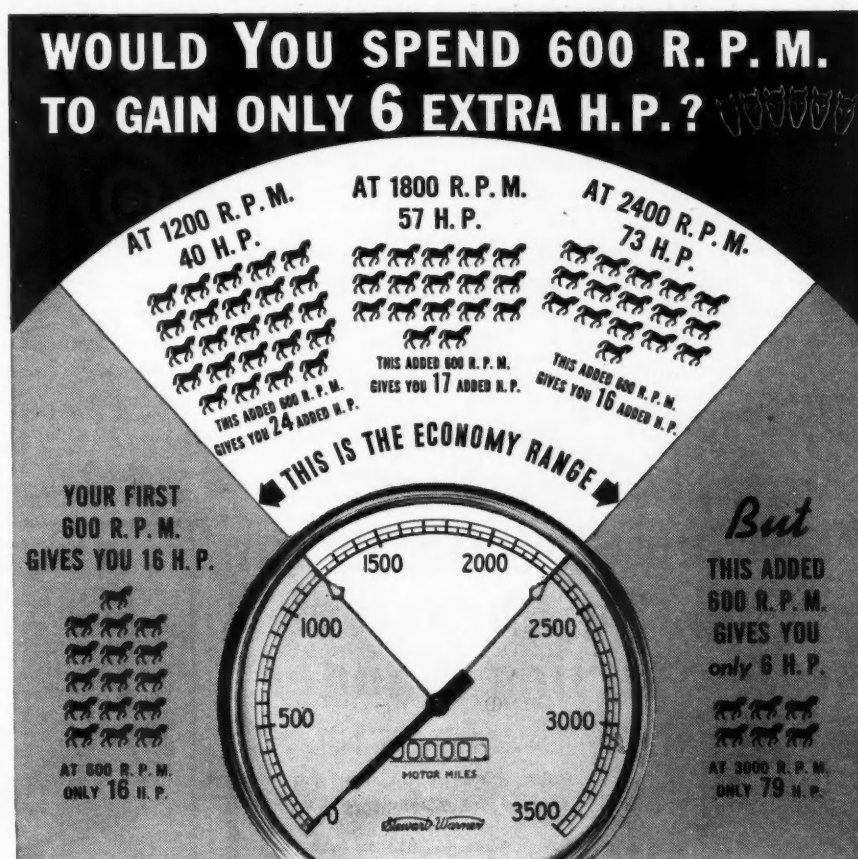
One fleet operator piped to remark that he had made a study and found that 20 garage employees were having as many accidents as 200 drivers, helpers and platform men were having.

An unidentified insurance company engineer declared that management

seems to have little interest in recommendations made by insurance company inspectors to have floor holes and other hazards eliminated. He was of the opinion that employees handling freight were not given adequate consideration by employers.

A pertinent warning was uttered by Harold Willings, of Huber & Huber Motor Express, Louisville, Ky. He said that "mobilization for defense will confront the industry with limited selection of men. We will be

(TURN TO PAGE 148, PLEASE)



Only WITH THIS AMAZING INSTRUMENT CAN YOUR DRIVERS *Know* THE ECONOMY RANGE!

EVERY TRUCK has an "economy range"—a range of motor speed *within which it delivers economical horsepower*, and above or below which it operates extravagantly. The truck for which this chart is accurate, for example, delivers only 6 added horsepower for the last 600 R.P.M., when running at 3000. The fuel required for the extra motor speed is out of all proportion to the power output!

There's only one instrument which tells your drivers when they're operating within the economy range—and that's the amazing Stewart-Warner Motor Mile Tachometer. Users report that these instruments *save up to 25% in gas and oil—and reduce repair bills by as much as 25%*—because actual motor miles are recorded as the basis for service, rather than road miles! Mail the coupon NOW!

STEWART WARNER

MOTOR MILE TACHOMETER

STEWART-WARNER CORPORATION
1876 Diversey Parkway, Chicago, Illinois

STEWART-WARNER CORPORATION
1876 Diversey Parkway, Chicago, Ill. Dept. F
We operate _____ trucks. Please tell us how
Stewart-Warner Motor Mile Tachometers can
help us cut costs.

Name _____
Address _____
City _____ State _____
Firm Name _____

NEW GMC 236 CU. IN. ENGINE

Now standard equipment on 2-ton models; optional on 1½-ton units

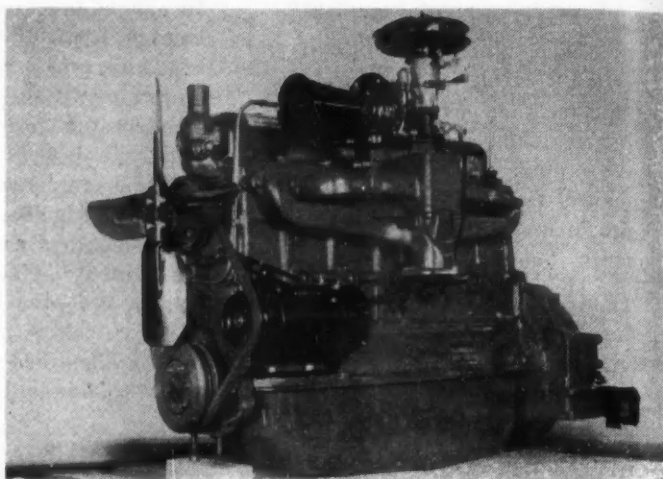
A NEW 236 cu. in. engine has been announced by General Motors Truck and Coach Division. It is being installed as standard equipment in the two-ton GMC models and as optional equipment in the 1½-ton models.

It is a valve-in-head engine developing 97 hp. at 3200 r.p.m. and 192 lb. ft. of torque at 1000 r.p.m. The compression ratio is 6.75. Engine weight without accessories is 520 lb.

Exhaust valves are of silchrome and intake valves are of chrome nickel steel. They are operated by granodized perlitic malleable iron rocker arms with Tocco hardened bearing surfaces.

Pistons have a stepped-dome head to control combustion and reduce detonation. They are equipped with four piston rings, three of which are

Right: Manifold side of GMC's new valve-in-head 236 cu. in. engine



compression rings and one is slotted for oil control. Four main bearings support the crankshaft. All bearings are of the precision type. Crankpin diameter is 2 5/16 in.

A four-bladed fan 17½ in. in diameter turns 1.24 times engine speed. It is driven by the water pump shaft. Water flow from the pump is directed against valve seats by spray nozzles.

The carburetor is a fixed adjust-

ment plain tube downdraft unit with a 1⅜ in. throat size.

Elastic Stop Nut Expands

To meet the increased demand for its line of self-locking nuts, the Elastic Stop Nut Corp. has doubled the floor space of its plant at Union, New Jersey. The original building was erected in 1940 by The Austin Co. and has attracted considerable attention by virtue of the fact that all of its steel construction is fastened with bolts and Elastic Stop Nuts, instead of rivets.

"Saving 60% On Labor ... 30% On Abrasives with the Sterling Sander"



One Hand Does The Work of Three!



Sterling

TOOL PRODUCTS COMPANY

368 East Ohio Street, Chicago, Ill.

—MIKE'S AUTO BODY SHOP
CLINTON, IND.

"The Sterling gives us a better job of feather edging. We are able to turn out better work in less time and at a bigger profit. Saving close to 60% on labor and about 30% on abrasive."

Fleet operators! End high sanding costs with the Sterling SPEED-BLOC Sander. This high-speed tool does the work in a fraction of the time . . . saves up to 75% on labor and abrasives in sanding undercoats, feathering spot jobs, removing lettering, etc. Sands flat or curved surfaces—wet or dry. Soon pays for itself.

Write for full details or
ask your jobber



NOJAX
TRADE MARK

Emergency Flat Tire Truck

The talk of the trade. Needed by every motorist. Carry in car trunk. Drive flat-tire wheel on tire truck, locks in place, ride away and change flat later at service station.

A Cello product

See your nearest jobber or write for catalog sheets

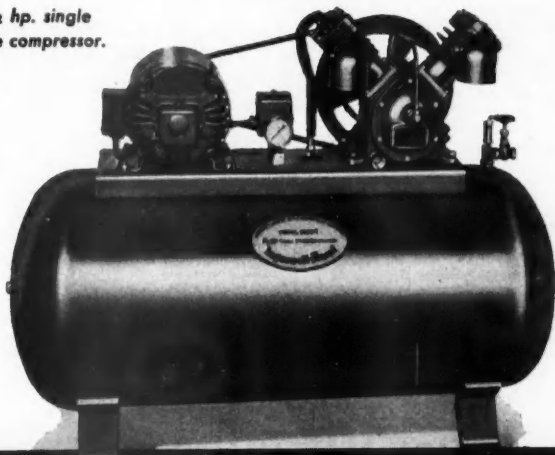
Cello Products Co., East Boston, Mass.

Qualidade
Qualität
Calidad
Qualité
Kayectbo

Ingersoll-Rand is the word for Quality in any Language . . .

No matter where you go Ingersoll-Rand compressors are recognized as the quality units. They are sturdily built and features such as "V" type construction, ball bearings and centrifugal unloaders insure long life. Ask the I-R jobber about them.

1½ hp. single stage compressor.



Ingersoll-Rand
3-16 11 BROADWAY NEW YORK, N. Y.

Everything you want in UNIVERSAL JOINTS



Blood Brothers

Joints are backed by
30 years Factory & Field Experience

Whatever your requirements, if your problem is to transmit power at an angle, our field and factory experience of more than 30 years is at your command. Our Engineering Department will gladly submit quotations covering your requirements.

SPECIFY

BLOOD BROTHERS MACHINE COMPANY
DIVISION OF STANDARD STEEL SPRING COMPANY
ALLEGAN, MICHIGAN

Blood Brothers
UNIVERSAL JOINTS
FOR RELIABILITY AND ENGINEERING EXCELLENCE

DESIGNED TO SAVE YOU TIME



NEW

NO. 115 IGNITION POINT ALIGNER

An accurately machined and properly tempered Tool that aligns both stationary and breaker arm contact points in all distributors. With it you can do the job in just a few minutes. Many of these Tools are already giving satisfaction—get one for yourself and you'll be pleased.

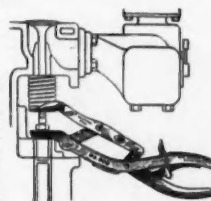
NO. 600 VALVE SPRING LIFTER

The old favorite. Jaws tempered and adjustable to different springs. Parallel action. Thousands of these in daily use.



NO. 125 IGNITION POINT REFACTOR

Companion to 115 above. After aligning points they should be refaced for perfect contact. The 125 uses small emery wheels, not just coated paper, and produces a good job with just a few turns of the handle. High speed positive chain drive. Services nearly all distributors. 4 wheels furnished.



NO. 900 "HI-OFFSET" VALVE LIFTER

For under-the-fender servicing of low hung motors. Allows plenty of working space and clear view of valve. Only 8¾" long with a total parallel lift of 3". Jaws are adjustable to different springs. Improved safety ratchet lock.

ASK YOUR JOBBER . . . OR WRITE DIRECT TO—

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MANUFACTURING CO., LANCASTER, PA.

AND HAMILTON, ONTARIO

Wash Trucks and
Busses Faster and
Easier With the
Longer Lasting—



BEAURLINE FOUNTAIN BRUSHES



● Keep your fleet clean at a saving in *time* and *money*! Made with all-aluminum head and special rubber bumper to protect finish. All parts replaceable. Widely used and recommended!

Write for **FREE Literature!**

Rapids Products Co.

220 Sixth Street, N. W.

P. O. Box 207

Cedar Rapids, Iowa

(CONTINUED FROM PAGE 125)

faced with so-called floating compensation risks—men who go from one terminal to another and get into accidents and pick up compensation."

The operations portion of the program featured a symposium on brakes and brake performance, two papers on preventive maintenance and a paper on gasoline and oil economy. The latter, given by R. J. S. Pigott, Gulf staff engineer, is published in considerable detail elsewhere in this issue.

In giving the details of his preventive maintenance program, Grover D. Gilbert, superintendent of motor equipment, Illinois Bell Telephone Co., Chicago, said: "I do not believe there is any question as to a definite need for some type of preventive maintenance program in all types of operation. This was brought out at a recent fleet operators' clinic which indicated that one out of every three motor failures on the highway could be eliminated if fleetmen would make it a habit to systematically tune up their engines every 5000 miles of operation, and studies by the American Automobile Association indicate that 25 per cent of the road service calls are due to motor failures brought about by battery and ignition failures, a large per cent of which were due to neglect of these items.

"I believe that it is essential that each operator study his own operating conditions and, using the fundamental principles of preventing trouble before it happens, develop his own preventive maintenance program. This can be accomplished only by experience with his own fleet. I also feel that any preventive maintenance program which you may develop, no matter how simple, will pay dividends. It will reduce operating expenses, reduce accidents which are frequently caused by trucks stalled on the highway, as well as accidents caused by brake and steering failures, and will promote better public relations."

Keeping up to date in preventive maintenance was the subject employed by Harley W. Drake, superintendent of equipment, Pacific Highway Transport, Seattle, Wash. He struck a new note, and an important

KEEP 'EM CLEAN the EASIEST and LEAST EXPENSIVE way!

Sure—you can clean up your truck bodies in perfect shape with any good soap, plus plenty of "Elbow-grease" and lots of time. You can do it with plain water. But the paint job takes it on the chin—and there's little lustre on the finished surface. Clean 'em the easiest way, which also happens to be the quickest and cheapest as well as the best. Use

MAGNUS NXL

All you have to do is sponge or spray it on—let it soak in a few minutes and then rinse off with fresh water. All the road dirt and film come away as the rinse water "sheets" off with nary a trace of streaking. The job is quick. But wait till you see the lustre you get on your paint jobs. Many a user has told us that he credits NXL with saving him the money he'd have otherwise spent on a repaint job. And remember that NXL is completely harmless to painted surfaces. Of course if you've let your cleaning go too long, or your methods have been ineffective, you may have to use Magnus 55-P for the first cleaning or two to get rid of the stubborn oil and grease. And the job 55-P does will surprise you, too.

When they're once good and clean, NXL will cut your cleaning bill to the bone and set new standards for your "rolling ads".

GOT YOUR COPY YET?

The Magnus Truck Cleaning Handbook belongs in the hands of every fleet maintenance man, because of the money saving ideas it contains.

MAGNUS CHEMICAL COMPANY

Manufacturers of Cleaning Materials, Industrial Soaps, Metallic Soaps, Sulfonated Oils, Emulsifying Agents and Metal Working Lubricants
38 South Avenue Garwood, N. J.

MAGNUS CLEANERS

Reduce Maintenance Costs -- with

SAFETY SPEED CONTROL

YELLOW CAB COMPANY of SAVANNAH

"EVERY DRIVER IS AN ESCORT"
315 EAST CONGRESS STREET

SAVANNAH, GA.

July 15, 1939

Safety Speed Control Co.,
4242 W. Chicago Ave.,
Chicago, Ill.

Gentlemen:

In reply to yours of recent date we will gladly recommend Safety Speed Control to the fleet operators. We have used your Control for the past year on all our cabs and it has been very satisfactory.

We operate under a city ordinance with 30 mile controlled speed. Before using your Safety Speed Control we were using vacuum carburetor governors, which made our cabs very sluggish and at times caused minor accidents that could have been eliminated with Safety Speed Control.

With the elimination of minor accidents with Safety Speed Control, we have improved our insurance experience and received a nice reduction in our liability insurance cost. We also notice a considerable reduction in the cost of our equipment maintenance.

We do not hesitate in recommending your Safety Speed Control for the fleet operator for it does what the name implies - controls speed and saves equipment.

Very truly yours,
YELLOW CAB COMPANY

By:

John S. Hood
Supt.

Just one of many complimentary letters, this cites one of the outstanding reasons why fleet operators recommend and approve the SAFETY SPEED CONTROL.

Write today for
latest bulletin.

SAFETY SPEED CONTROL COMPANY
4242 W. Chicago Avenue, CHICAGO, ILL.



ATLAS Collapsible GATE

(CLOSED - OPEN)

Heavy galvanized wire suspended from rings which slide on a round track. "Chain Link" weave as is used in best quality fence. Protects against theft and loss. Easy to open and close. Weave collapses within itself, saving space. Rigidly made for long, hard service, yet it is so light in total weight that average gate weighs only 90 lbs. Easily installed by owner's men. Satisfaction guaranteed. Quantity Discounts—Distributors Wanted.

ATLAS FENCE COMPANY

Richmond St. & Castor Ave., Philadelphia

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1

**BURN-OUT PROOF
DIRECTIONAL SIGNAL SWITCH**

In complete sets of Signal-Stats or as a replacement switch—ASK YOUR JOBBER

SIGNAL-STAT CORPORATION
68 JAY STREET BROOKLYN, N. Y.

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BATTERY
CHARGER**

Until You Have Investigated The

VALLEY SUPERDUTY CHARGER

Eliminate Run Down Batteries for Low Cost Battery Mileage. The new, improved, Valley-Guaranteed (two years) charger connects to the lighting circuit . . . is easy and economical to operate . . . no moving parts. Now it is easy and inexpensive to obtain long battery life by maintaining efficient battery charge.

Model SG-12 charges 1 to 12 6 volt batteries.

NOW ONLY \$28.00

VALLEY ELECTRIC CORP.
4221 Forest Park Boulevard St. Louis, Mo.

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**BOLSER
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SEE YOUR JOBBER TODAY

**COVER 70% OF ALL
MAKES OF TRUCKS
AND BUSES ARE
Zollner EQUIPPED**

ZOLLNER

HEAVY DUTY PISTONS

ZOLLNER MACHINE WORKS FORT WAYNE, IND.

one, when he urged the use of individual job instruction sheets.

"I have looked over a variety of preventive maintenance forms designed, I assume, to guide the workman in the performance of an assigned duty. But only in very rare instances has any one of these forms contained any instructions regarding tolerance, fits, sizes or other specifications. Can you imagine a machinist giving a list of operations with no dimensional specifications or drawings? Yet that is quite a common practice in the automotive maintenance field. Most forms simply provide for the workman's checkmark to indicate whether or not a certain group was remembered, and we assume this act to be an indication of the completeness of a job.

"Let us be specific and issue individual instructions, detailed instructions, showing dimensions, tolerances, fits, parts numbers, and tool specifications. All too often tool equipment which promises to reduce mechanic fatigue, increase production and perfect operations is purchased only to be placed in the tool room and forgotten. To assure the use of the proper tools which you have furnished for the job, specify it on the job instruction sheet along with the job specifications.

"Specific job instructions will eliminate guess-work, establish standard practices, provide a more uniform performance of the vehicle repaired, lengthen vehicle life, guarantee uninterrupted vehicle performance, reduce maintenance costs, and improve operating costs."

The brake symposium was based on the recently published brake tests made by the Interstate Commerce Commission. The participants in the discussion were Karl F. Walker, Bureau of Motor Carriers, ICC; Fred

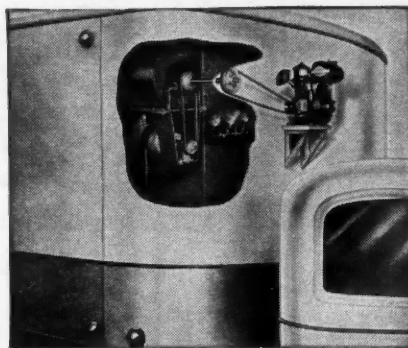
(TURN TO NEXT PAGE, PLEASE)

Precision-built AUTOCAR TRUCKS

SHORT-WHEELBASE
OR CONVENTIONAL
GASOLINE OR
DIESEL
IN ALL
CAPACITIES



ARDMORE, PA. AND LEADING CITIES



RELIABLE REFRIGERATION

... at lowest first cost,
lowest operating cost

The D & G Spray Type Refrigerating Unit uses reliable ice and salt, has clutch release for easy starting, direct cooling by brine spray, no coils or fins to defrost, bronze fitted pump and hosts of other features that contribute to its reliability and freedom from maintenance expense. Write us for full facts.

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Available Trucks

Builders of Fine Motor Trucks, Tractors, Trailers and Buses since 1910.

Capacities from 1½ to 10 tons.

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AVAILABLE TRUCK COMPANY

2501 Elston Ave. Chicago, Illinois

**REDUCE
COSTS
with
RAMCO**

**10
up**

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SPECIALLY BUILT FOR FLEET OPERATION

See your Ramco Jobber or write Ramsey Accessories Mfg. Corp., 3710 Forest Park Boulevard, St. Louis, Missouri.

LOWER YOUR FILTER MAINTENANCE COSTS

MICHIANA

Duo-Flo

OIL FILTERS

Write for Bulletin 839

**MICHIANA PRODUCTS
CORPORATION**

Michigan City, Ind.



SHORT CUTS to SAVINGS through OAKITE cleaning

For Example:

QUICK, EASY WAY TO CLEAN MOTORS AND CHASSIS

Want a better way to clean motors and chassis? Even if you don't have steam cleaning equipment, you can still do the work quickly, easily this inexpensive way. Just spray motors and chassis with solution of Oakite Composition No. 9 and kerosene, allow short soak, then rinse. That's all! Fleet maintenance men everywhere say this is the **QUICKEST** and **EASIEST** method they have ever used!

Get This Money-Saving 36-Page Booklet FREE!

Many other money and time-saving cleaning tips are given in booklet shown at right. Ask for your copy of this helpful fact-filled booklet today!

OAKITE PRODUCTS, INC., 26D Thames St., NEW YORK, N. Y.
Representatives in all Principal Cities of the U. S. and Canada



OAKITE

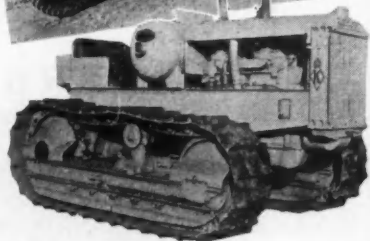


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MATERIALS METHODS SERVICE

FOR EVERY CLEANING REQUIREMENT

ON THE Toughest Jobs



ENSIGN-equipped trucks are today doing the toughest jobs. Getting there faster with the biggest pay load at the least expense—that's what counts.

Butane carburetion equipment sold and installed by qualified Ensign dealers is the finest merchandise available.

Results reported from many ENSIGN Butane installations in all parts of the country prove the practicability of Butane as an engine fuel — lower fuel costs, greatly reduced oil consumption and reduced maintenance.

ENSIGN, carburetor builders for thirty years, offers a complete line of quality carburetion for every engine need. Factory branches at Dallas and Chicago and dealers everywhere welcome your problems and inquiries.

● CARBURETORS FOR BUTANE OR
COMBINATION BUTANE & GASOLINE

ENSIGN

CARBURETOR CO. LTD.

HUNTINGTON PARK, CALIF. • DALLAS, TEX. • CHICAGO, ILL.

(CONTINUED FROM PAGE 149)

L. Hall, Bendix-Westinghouse Automotive Air Brake Co., Pittsburgh; J. L. S. Snead, Jr., Consolidated Freightways, Inc., Portland, Ore.; V. M. Drew, Fruehauf Trailer Co., Detroit, Mich., and Fred B. Lautzenhiser, International Harvester Co., Chicago.

The consensus of the symposium was that, the findings of the I.C.C. notwithstanding, currently produced trucks and truck-tractors put in operations reasonably near those for which they were designed will meet, or better than meet, the brake requirements of the ICC, provided the approximate brake lining area to gross weight ratio is maintained, compromises are not made on the installation of the power brake system, and that logical inspection and maintenance schedules are established and maintained.

Socially the second annual meeting was also a success, due entirely to the cooperative action of the local arrangements committee headed by R. C. Coleman, president of the American Safety Tank Co., Kansas City, Mo. A fall meeting will be held in connection with the annual convention of the A.T.A. at New York City, sometime between Oct. 15 and Nov. 15.—G.T.H.

END

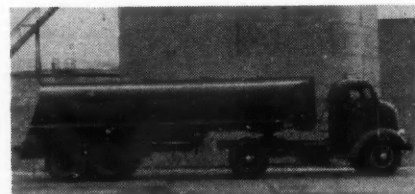
(Please resume your reading on p. 36)

K-D Lamp Names Keeling & Co.

The K-D Lamp Co., Cincinnati, has appointed Keeling & Co., Inc., of Indianapolis as advertising and merchandising counsel.

Federal-Mogul Bearing Data

A new 160-page engine bearing catalog has been released by Federal-Mogul Service, 4809 John R. St., Detroit, Mich. In loose leaf form the new issue contains 745 new listings bringing the total to approximately 6000.



The Heil Co. claims this 5500-gal. three-compartment "trailerized" tank to be the first of its kind to be built entirely of aluminum. Yep! Defense requirements have curtailed the output but it's worth watching

WOOD

HOISTS & DUMP BODIES
Every Size and Type
for EVERY HAULING JOB

GAR WOOD INDUSTRIES, INC.
 DETROIT, MICHIGAN
Branches and Distributors Everywhere

Be Sure to Specify
AMERICAN BOSCH
Fuel Injection Equipment
FOR DIESEL ENGINES



AMERICAN BOSCH CORPORATION
 Springfield, Mass. New York, Chicago, Detroit.

ZEHR
COLLAPSIBLE GATES

Safe . . . easy and simple to handle. Zehr Chain Link Gates are all-welded steel designed for great strength and long continuous service. They are theft-proof, rustproof and flexible.

Distributors Wanted
 WRITE FOR DETAILS AND PRICES.
ZEHR PRODUCTS COMPANY
 2130 East Hazzard Street • Philadelphia, Pa.

Specify . . .

XACTO Printing Pump
 To Check Fuel Deliveries
 at the Pump

AKRAFLO Fuel Consumption
METER to Check
 Fuel Consumption at the Motor

S. F. BOWSER & CO., INC.
 1360 Creighton Ave.
 FORT WAYNE, INDIANA

Handy
SUPER SERVICER

Quick Charger
 Compact portable Tester, Booster and Quick Charger. Tests battery in 1 min.; Charges FAST and SAFELY in car. Specify 115 or 230 volts when ordering. Complete with Bulbs, Leads and Clips . . . **\$180.00**

BALDOR ELECTRIC CO.
 4340 Dunsmuir Ave.,
 ST. LOUIS, MO.

LEGISLATIVE LOOKOUT

(CONTINUED FROM PAGE 38)

four-wheel trailer and 35 ft. for tractor semi-trailer combination.

S.561 would require registration card to be inclosed and locked in a metal display holder to be attached to steering post.

H.760 would require safety glass for replacement of any broken glass in motor vehicles after July 1, 1940.

S.567 would reduce length of vehicle from 35 to 32 ft.

MAINE

H.1601 creates Maine Turnpike Authority.

MICHIGAN

H.464 would require wipers on rear windows of cars.

MINNESOTA

H.279 licenses motor vehicle transporters at \$250 each, with additional fee of \$2 each car, requiring public liability insurance and caravans to keep distance of at least 500 ft. apart. Becomes Ch. 213.

MISSOURI

S.179 would authorize Public Service Commission to issue limited licenses for trucks with certificate of convenience and necessity or interstate permit according to percentages of annual fee; for one-half month an amount equal to 5 per cent of annual license fee graduated to 78 per cent of annual fee for nine months' operation.

NEBRASKA

Bill 482 as originally drawn providing 5 cents diesel fuel tax has been revised to impose ton-mile tax on commercial vehicles not paying gasoline tax.

NEW MEXICO

H.296 provides fee for transportation of motor vehicles.

PENNSYLVANIA

S.854 would increase speed limit from 50 to 60 m.p.h.

WISCONSIN

H.247 would require that brakes on vehicles over 1500 lb. gross weight be able to stop vehicles within 30 ft. when traveling 20 m.p.h.

FEDERAL

H.4549 would increase District of Columbia gas tax 2 cents per gallon.

END

(Please resume your reading on p. 40)

For VIBRATION-PROOF FASTENINGS



*on any
Automotive
and Electrical
Equipment . . .*

Used by many of the largest truck and bus fleets for safety and economy. These nuts will not work loose under the most severe vibration or hard service. They are self-locking, yet can be removed and used over and over again.

CATALOG contains a graphic explanation of the Elastic Stop principle, presents test and application data, and lists the complete line of nuts. • Write for a copy.



ELASTIC STOP NUT CORPORATION
 2349 VAUXHALL ROAD • UNION, NEW JERSEY

Elastic Stop SELF-LOCKING
NUTS

Dart Trucks

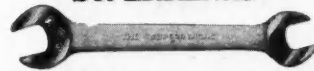
**HEAVY DUTY FOR
OFF THE HIGHWAY SERVICE**

— Specially Designed for —
 Coal Mining—Iron Ore Mining—Copper
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It Costs No More for Trucks Specially
 Built to Fit Your Needs. Have Our Engi-
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DART TRUCK COMPANY
 KANSAS CITY, MO.

WILLIAMS
"SUPERRENCH"



Chrome-Molybdenum, heat-treated, chrome-
 finished. Styles and sizes for all work.
 Fully Guaranteed.

You'll find our booklet "How to Select and
 Use Wrenches" helpful and instructive;
 send for it.

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Save Pencil Work

Order and Sell

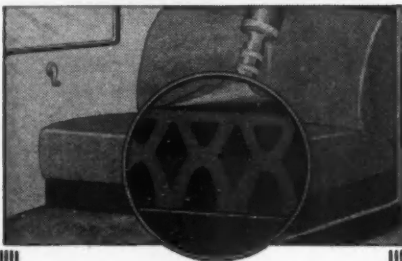
CARTER
PARTS

by the Package

Carter Carburetor Corporation

2820-56 North Spring Ave., St. Louis, Mo.

Karpex All-Rubber SEAT CUSHIONS Cut Costs to the Bone



Truck owners the country over are profiting from the use of Karpex Black Diamond seat cushions and back rests. Their superior heavy-duty diamond grid construction is the result of years of research. This exclusive scientific design combined with specially processed semi-sponge rubber guarantees extra-long life, eliminates upkeep expense and helps prevent driving fatigue. There's sizes to fit every truck. Get complete facts and prices today.

KARPEX MANUFACTURING CO.

1424 E. 19th Street, Indianapolis, Ind.

TAPERED ROLLER BEARINGS

Tyson

ROLLER BEARING CORP.
MASSILLON, OHIO

SAVE WEIGHT with REPUBLIC DOUBLE STRENGTH STEEL

REPUBLIC STEEL CORPORATION
General Offices - Cleveland, Ohio

TRADE MARK
NOC-OUT
HOSE CLAMPS

THE HOSE CLAMP WITH THE THUMB SCREW
Use Noc-Out Hose Clamps... the standard of the automotive industry, for quick tightening, perfect all-around seal on your hose connections. They have the extra margin of strength which makes them the leading automotive hose clamp. Type "A" Adjustable—will fit many hose sizes. Type GBB, solid band, heavy duty clamp for Booster Brakes. GHH for all types of heater hose.

WITTEK MFG. CO.
4305 W. 24th PL., CHICAGO, U.S.A.

TRUCK OUTPUT CUT

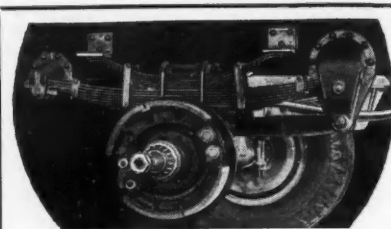
(CONTINUED FROM PAGE 19)

is hunky-dory, and that so far as they are concerned the success of the defense effort is definitely assured. This sort of bosh is now being retracted piecemeal. The press is now carrying railroad-inspired articles pointing out that industry and the armed forces will have to do their part in seeing that railroad equipment is not delayed at point of origin and point of destination. Then there was the illuminating statement made by the Association of American Railroads early in May in which it was indicated that on the basis of anticipated increased loadings the railroads would need 120,000 additional cars in 1942 and 150,000 more cars in 1943. Add to that the 100,000 cars ordered since the defense program started and the total of 370,000 tends to verify the prediction made by Mr. Janeway.

The railroads' admission of inadequacy is resulting in an appreciation that trucks are needed now and will be needed to a greater degree as the tempo of the defense effort accelerates. Under the circumstances there is every likelihood that if the defense effort shows signs of suffering for lack of transportation facilities, the curb on truck production will be lightened or lifted entirely.

The unpredictable factor in the entire picture is materials. But even here there is no cause at the moment for pessimism. If material shortages develop and priorities are invoked the motor truck should be placed high on the priority list. That, as pointed out in the A.M.A. brief, was the case during the last war when, in the face of a passenger car curtailment the Priorities Division of the War Industries Board gave trucks a rating defined as comprising "orders and work which while not primarily designed for the prosecution of the war, yet are of public interest and essential to the national welfare or otherwise of exceptional importance."

The brief continues: "Trucks in 1918 were regarded in the same classification as railroads and other utilities in which there was no distinction made as between the military and essential civilian services performed. During that time, because of congestion in railroad movement, the Council of National Defense passed



GRAMM TRAILERS

"Ask the man who pulls one"

**New Lightweight Design
Using Hi-Tensile Steel**

GRAMM TRAILER DIVISION, Delphos, O.

THE Decalomania that is . . .

FIRST in

**APPEARANCE
ECONOMY
DURABILITY**

Permalux "KOLORFILM"

PERMALUX "KOLORFILM" decals offer greater durability and economy in application and maintenance. Completely synchronous with modern truck finish, they last longer . . . look better!

IT'S MADE OF DuPONT "DULUX"

Write TODAY for details.

THE PERMALUX COMPANY

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Chicago, Ill.

**FRINK
SNO-FLOWS**

Both "V" TYPE and
ONE WAY BLADE TYPE

hand or power hydraulic control

FOR ALL MOTOR TRUCKS
FROM 1½ to 10 TONS

Write for catalog 38AC and 38BC with discount to truck dealers.
CARL H. FRINK, Mfr., CLAYTON, 1900 1st., N. Y.
DAVENPORT-BESLER CORP., DAVENPORT, IOWA
FRINK SNO-FLOWS OF CAN. Ltd., TORONTO, ONT.

For running-in new and rebuilt
engines use auxiliary lubricants
containing "dag" Brand
colloidal graphite.

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Port Huron  Michigan

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OUTSTANDING

performance in the
Automotive Industry



**WASH TRUCKS-BUSES
BETTER
IN HALF THE TIME!
FOUNTAIN
BRUSH**



**\$10.50
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Quickest, easiest, best for fleet care. Made in hollow, cast aluminum head with four foot handle supplying continuous stream of water. Bristles sturdily set in head and flare to 8" diameter. Weighs only 2 3/4 pounds. This brush will easily pay for itself many times over in a few months. **ORDER TODAY** and ask also for **FREE** descriptive folder.

FLOUR CITY BRUSH CO.
MINNEAPOLIS, MINNESOTA
or **PACIFIC COAST BRUSH CO.**
Los Angeles, Cal.

HOLLAND CAN "TAKE IT"

The smartest, most improved unit of its type, Model V-400 Vertical Lift Landing Gear is especially adapted for heavy duty service.

Powerful—rugged—dependable.

Complete truck and trailer equipment.
Catalog on request.

HOLLAND HITCH CO.
HOLLAND, MICHIGAN

—More Profits per Job with HEIL

Bodies and Hoists

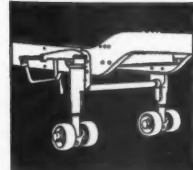
Safe — dependable — complete line for all types of service. Ask for free catalog.

THE HEIL CO.

Milwaukee, Wisconsin Hillsdale, New Jersey
Hoists — Bodies — Tanks — Road Scrapers — Snow Plows
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AUSTIN

THE ACCEPTED
STANDARD . . .
A complete line
of **LANDING
GEARS . . .**
**HORIZONTAL,
VERTICAL and
FOLDING TYPES.**



Write for complete information on "SAFETY PROPS" and FIFTH WHEELS.

AUSTIN

TRAILER EQUIPMENT COMPANY

MUSKOGON
MICHIGAN

this resolution in March, 1918:

"Resolved, that the Council of National Defense approves the widest possible use of the motor truck as a transportation agency, and requests the State Councils of Defense and other State authorities to take all necessary steps to facilitate such means of transportation, removing any regulations that tend to restrict and discourage such use."

The resolution is one which some States should hearken to in the present emergency.

Another development of interest to users of motor trucks is that dealing with excise taxes. A philosophy current in Administration quarters and voiced by Leon Henderson, of the Administration of Price Control and Civilian Supply, is that excise taxes should be loaded on goods which compete with the defense effort. Various goods have been placed in this category. Automobiles have been mentioned, and so have refrigerators, but even in testimony before the House Ways and Means Committee Mr. Henderson has not included trucks by name. Mr. Henderson testified in favor of a 20 per cent excise tax on automobiles. There is a disposition to believe that he did not intend the term "automobiles" to include motor trucks. The Treasury recommendation on excise taxes supported the view that automobiles should take a higher tax and that motor trucks be let alone. The Treasury proposed raising the automobile tax from 3 1/2 to 7 per cent, and advocated no change in the 2 per cent tax on trucks.

If Mr. Henderson looks upon motor trucks as part of the defense effort and in no way competitive with it, he will doubtless also interest himself, as the appointed guardian of Civilian Supply, in the matter of assuring an adequate supply of repair parts for the 4 3/4 million trucks now in use. This is an important issue in any planning that may be done in Washington. Trucks in use must be kept running come what may, and especially if unforeseen material shortages should curtail truck production beyond the 10 per cent agreed upon.

These are the developments in the defense program that affect motor trucks. They are definitely no cause for alarm. They should inspire optimism.

END

(Please resume your reading on p. 19)

KINNEAR TRUCK DOORS

**OPENS UPWARD AND
COILS OUT OF WAY!
ALL METAL • DURABLE**

Lower maintenance . . .
Less chance of damage.
Always safe from wind.
Burglar-proof and fire-
proof. Write for details.

Also for Buildings
THE KINNEAR MFG. CO.
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OSHKOSH

4 Wheel Drive Trucks

A proven product. 1 1/2 to 10
ton capacity. Write for com-
plete information.

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JONES PORTABLE TACHOMETER



The world's largest
operators of com-
mercial vehicles use
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Tachometers to
check engine speeds
for tune-ups, and
setting governors,
etc. Here are a few:
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La., N. J., N. Y.,
Shell Petroleum Co.,
Atlantic Refining
Company, Tidewater

Oil Company, Keeshin Motor Express,
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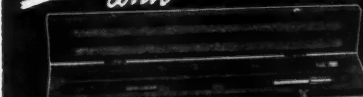
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Advertisers' Index

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AC Spark Plug Co.88-89
Acheson Colloids Corp.152
Ahlberg Bearing Co.78
Alan Wood Steel Co.146
Albertson & Co., Inc.91
Alomite10
Aluminum Company of America, 3rd Cover

American Automatic Devices Co.145
American Bosch Corp.151
American Brake Shoe & Foundry Co. (Kellogg-American Division)110
American Brakeblok Div. of The American Brake Shoe & Foundry Co.95
American Cable Division.8
American Chain & Cable Co., Inc.8
American Hammered Piston Ring Co., Koppers Div.79
American Safety Tank Co.94
American Steel Foundries Co.100
Anthony Co.145
Armour and Co. Curled Hair Division116
Armstrong Cork Co.119
Atlas Fence Co.149
Austin Trailer Equipment Co.153
Autocar149
Autopulse Corp.86
Available Truck Co.149

Baldor Electric Co.151
Bendix Products Div. of Bendix Aviation Corp.39
Bendix - Westinghouse Air Brake Co.128
Blackhawk Mfg. Co.13
Blood Brothers Machine Co.147
Bolser Corp.149
Bordick Steel Products, Inc.135
Bowser & Co., S. F.151
Brown-Lipe Gear Co.155

Carter Carburetor Corp.151
Cello Products Co.126
Champion Spark Plug Co.9
Chase & Co., L. C.120
Chevrolet Motor Div. General Motors Sales Corp.59
Cole-Hersee Co.146
Continental Motors Corp.102
Crescent Co.139
Cummins Engine Co.1
Curran Corp.145

Dart Truck Co.151
De Vilbiss Co., The.61
Delco-Remy109
Ditzler Color Co.6-7
Dodge Div. of Chrysler Corp., 2nd Cover
Dole Valve Co., The.3
Do-Ray Lamp Co.144
Dromgold and Glenn149
Dry-Zero Corp.132

Eberhard Mfg. Co. (Div. of the Eastern Malleable Iron Co.)106
Edison-Splitdorf Corp.69
Edwards Iron Works112
Elastic Stop Nut Corp.151
Electric Storage Battery Co., The.41
Ensign Carburetor Co.150
Ethyl Gasoline Corp.141
Exide Batteries41

Federal-Mogul Corp.121
Federal Motor Truck Co.43
Ferodo and Asbestos, Inc.92
Fitzgerald Mfg. Co.143

Flour City Brush Co.153
Ford Motor Co.65
Four Wheel Drive Auto Co., Back Cover
Frink, Carl H., Inc.152
Fruehauf Trailer Co.12
Fuller Mfg. Co.66

Gar Wood Industries, Inc.151
Gatke Corp.104
General Electric Co.137
General Tire & Rubber Co.87
Globe-Union, Inc.129
Goodrich Co., The B. F.156
Gramm Trailer Div. Gramm Motor Truck Corp.152

Hall Mfg. Co.153
Hansen Mfg. Co., A. L.60
Haskelite Mfg. Corp.130
Hastings Mfg. Co.75
Heil Co., The.153
Hein-Werner Motor Parts Corp.136
Holland Hitch Co.153
Hoof Products Co.96

International Harvester Co.16
Imperial Brass Mfg. Co.142
Ingersoll-Rand147

Johns-Manville131
J-P Mfg. Co.153
Jones-Motrola Sales Co.153

K-D Lamp Co.146
K-D Mfg. Co.147
Karpex Mfg. Co.152
Kathanode Corp.146
Kellogg Div. of The American Brake Shoe & Foundry Co.110
Kester Solder Co.122
Kingham Trailer Co., Inc.108
King-Seeley Corp.84
Kinnear Mfg. Co.153
Koppers Co., American Hammered Piston Ring Co.79

Lincoln Engineering Co.97
Lindsay Structure132
Link-Belt Co., Inc.76
Lion Oil Refining Co.81
Lipe, Inc., W. C.93
Lubri-Zol Corp., The.47

McQuay-Norris Mfg. Co.14
Macmillan Petroleum Corp.111
Mack Trucks, Inc.49
Magnus Chemical Co.148
Marmon-Herrington Co., Inc.2
Meehanite Research Institute.99
Michiana Products Corp.149

Midland Steel Products Co.127
Miley Co., L. C.144
Monroe Auto Equipment Co.90

Nash & Bro. Co., L. B.114

Oakite Products, Inc.150
Oshkosh Motor Trucks, Inc.153
Owens-Corning Fiberglas Corp.138

Parish Pressed Steel Co., Subsidiary of Spicer Mfg. Corp.50-155
Pennsylvania Rubber Co.70
Permalux Co., The.152
Pierce Governor Co., The.117
Purolator Products, Inc.101

Ramsey Accessories Mfg. Corp.149
Rapids Products Co.147
Reo Motors, Inc.Front Cover
Republic Steel Corp.152
Rich Valves14

S K F Industries, Inc.152
Safety Speed Control Co.148
Salisbury Axle Co.155
Sangamo Electric Co.103
Schrader's Sons, A. (Div. of Scovill Mfg. Co., Inc.)143
Sealed Power Corp.71
Service Recorder Co., The.64
Sherwin-Williams Co.74
Shuler Axle Co., Inc.107
Signal-Stat Corp.149
Snap-On Tools Corp.48
Socony-Vacuum Oil Co., Inc.72-73
Sterling Tool Products Co.126
Spicer Mfg. Corp.155
Standard Oil Co. (Indiana)11
Sterling Motors Corp.146
Stewart-Warner Corp.125

Texas Co., The.4-5
Thermoid Co.77
Thornton Tandem Co.80
Timken Detroit Axle Co.142
Timken Roller Bearing Co.68
Timpte Bros.145
Toledo Steel Products Co.123
Trailer Company of America.105
Trucktor Corp.15
Tyson Roller Bearing Co.152

United States Asbestos Div. of Raybestos-Manhattan, Inc.82-83
United States Rubber Co.45-146

Valvoline Oil Co.62-63
Valley Electric Co.149
Van Norman Machine Tool Co.115

Wagner Electric Corp.103-113
Wagner Electric Corp.—Automotive Parts Div.103-113
Walter Motor Truck Corp.124
Watkins Babbiting Service.121
Waukesha Motor Co.85
Weatherhead Co.98
White Motor Co.67
Whitehead Stamping Co.146
Williams & Co., J. H.151
Witteck Mfg. Co.152

Zehr Products Co.151
Zollner Machine Works149